



## SEQUENCE LISTING

<110> MedImmune Vaccines, Inc.  
Kemble, George W  
Duke, Gregory M  
Spaete, Richard R

<120> Attenuation of Cytomegalovirus Virulence

<130> CM101US

<140> US 09/724,935

<141> 2000-11-28

<160> 31

<170> PatentIn version 3.2

<210> 1

<211> 18318

<212> DNA

<213> Human cytomegalovirus

<220>

<221> misc feature

<222> (17955)..(17955)

<223> n is a, c, g, or t

<220>

<221> misc feature

<222> (18105)..(18105)

<223> n is a, c, g, or t

<220>

<221> misc feature

<222> (18154)..(18154)

<223> n is a, c, g, or t

<220>

<221> misc feature

<222> (18160)..(18160)

<223> n is a, c, g, or t

<400> 1

cgctgtaggg ataaatagtg cgatggcggt tgtgggagaa cgcagtagcg atgggttgcg	60
acgtgcacga tccttcgtgg caatgccaat ggggcgttcc cagcattatc gtggcctgga	120
taacatgcgc ggcttttagga atttggtggt tggcgggatc gtcggcggtat gtctcttcgg	180
gacccggcat cgcagccgta gtcggctggt ctgttttcat gattttcctc tgcgcgtatc	240
tcatccgta cgggaattc ttcaaagact ccgtaatcga cctccttacc tgccgatggg	300
ttcgctactg cagctgcagc tgtaagtgc gctgcaaag catctcgggc ccctgtagcc	360
gctgctgttc agcgtgttac aaggagacga tgatttacga catggtccaa tacggtcac	420
gacggcggtc cggacacggc gacgatcccg acaggggtgat ctgcgagata gtcgagagtc	480

ccccggtttc	ggcgccgacg	gtgtccgtcc	ccccgccgtc	ggaggagtcc	caccagcccc	540
tcatcccacc	gcagccgcc	gcaccgacat	cggaaaccaa	accgaagaaa	ggtagggcga	600
aagataaacc	gaagggtaga	ccgaaagaca	aacctccgtg	cgaaccgacg	gtgagttcac	660
aaccaccgtc	gcagccgacg	gcaatgccc	gcgggtccgcc	cgacgcgcct	ccccccgcc	720
tgccgcagat	gccacccggc	gtggccgagg	cggtacaagc	tgccgtgcag	gcggccgtgg	780
ccggggctct	acaacaacag	cagcagcatc	agaccggaac	gtaacccgcc	cccgggtgcga	840
taaggaattt	tccgacttgg	cgcacatctc	cttcctcaat	gtttggacaa	taaacacatt	900
ccttgccaaa	aaatgacgtt	tccagaaatc	caaggcataa	atgtccgtac	accggccctt	960
cccaacacgg	agtttgagat	tccaagcagg	agagaagatc	atggtgtgga	tatggctcgg	1020
catcgggctc	ctcggcggtg	ccggactggc	ttccctggtc	ctggccattt	ccttattttac	1080
ccagcgccga	ggccgcaagc	gatccgacga	gacttcgtcg	cgaggccggc	tcccgggtgc	1140
tgcttctgat	aagcgtgggtg	cctgcgcgtg	ctgctatcga	aatccgaaag	aagacgtcgt	1200
cgagccgctg	gatctggaac	tggggctcat	gcgggtggac	accacccgc	cgacgccgca	1260
ggtgccgcgg	tgtacgtcgc	tctacatagg	agaggatggt	ctgccgatag	ataaacccga	1320
gtttcctccg	gcgcggttcg	agatccccga	cgtatccacg	ccgggaacgc	cgaccagcat	1380
cggccgatct	ccgtcgcatt	gtcctcgtc	gagctctttg	tcgtcctcga	ccagcgtcga	1440
cacggtgctg	tatcagccgc	cgccatcctg	gaagccacct	ccgccgccc	ggcgcaagaa	1500
gcggccgcct	acgccgcggg	tccgggcccc	caccacgcgg	ctgtcgtcgc	acagaccccc	1560
gacgccgata	cccgcgccgc	gtaagaacct	gagcacgccg	cccaccaaga	aaacgccgcc	1620
gcccacgaaa	cccaagccgg	tcggctggac	accgccggtg	acaccaggc	ccttcccga	1680
aacgccgacg	ccacaaaagc	cgccgcggaa	tccgagacta	ccgcgcaccg	tcggtctgga	1740
gaatctctcg	aaggtgggac	tctcgtgtcc	ctgtccccga	ccccgcacgc	cgacggagcc	1800
gaccacgctg	cctatcgtgt	cggtttccga	gctagccccg	cctcctcgat	ggtcggacat	1860
cgaggaactc	ttggaacagg	cggtgcagag	cgtcatgaag	gacgccgagt	cgatgcagat	1920
gacctgagac	cgaaagagcg	agcgcgtccg	ttgtacagtt	gtatagcagc	acacgccttc	1980
cctctttttc	accgcagcta	agagagagaa	agagagtatg	tcagtcaagg	gcgtggagat	2040
gccagaaatg	acgtgggact	tggacgttag	aaataaatgg	cggcgtcgaa	aggccctgag	2100
tcgcattcac	cggttctggg	aatgtcggct	acgggtgtgg	tggtgagtg	acgccggcgt	2160
aagagaaacc	gaccacccgc	gtccccgacg	ccgcccgact	tggtatgaccg	cggtgtttca	2220
cgttatctgt	gccgttttgc	ttacgcttat	gattatggcc	atcggcgcgc	tcatcgcgta	2280
cttaagatat	taccaccagg	acagttggcg	agacatgctc	cacgatctat	tttgcggctg	2340

tcattatccc gagaagtgcc gtcggcacca cgagcggcag agaaggagac ggcaagccat	2400
ggatgtgccc gacccggaac tcggcgaccc ggcccgcgg ccggtgaacg gagctatgta	2460
ctacggcagc ggctgtcgct tcgacacggt ggaaatggtg gacgagacga gacccgcgcc	2520
gccggcgctg tcatcgcccg aaaccggcga cgatagcaac gacgacgcgg ttgccggcgg	2580
aggtgctggc ggggtaacat caccgcgcac tcgtacgacg tcgccgaacg cactgctgcc	2640
agaatggatg gatgcggtgc atgtggcggc ccaagccgcc gttcaagcga ccgtgcaagt	2700
aagtggcccg cgggagaacg ccgtatctcc cgctacgtaa gagggttgag ggggccgttc	2760
ccgcgcgagt gctgtacaaa agagagagac tgggacgtag atccggacag aggacggtca	2820
ccatggacga tctgccgctg aatgtcgggt taccatcat cggcgtgatg ctcgctgctga	2880
tcgtggccat cctctgctat ctggcttacc actggcacga caccttcaaa ctggtgcgca	2940
tgtttctgag ctaccgctgg ctgatccgct gttgcgagct gtacggggag tacgagcgcc	3000
ggttcgcgga cctgtcgtct ctgggcctcg gcgcggtacg gcgggagtcg gacagacgat	3060
accgtttctc cgaacggccc gacgagatct tggctcgttg ggaggaagtg tcttcccagt	3120
gcagctacgc gtcgtcgcgg ataacagacc gccgtgtggg ttcacgtctt tcgtcgtcgg	3180
tccacgtcgc tagccagaga aacagcgtgc ctccgccgga catggcggtg acggcgccgc	3240
tgaccgacgt cgatctgttg aaacccgtga cgggatccgc gacgcagttc accaccgtag	3300
ccatggtaca ttatcatcaa gagtacacgt gaatgagaaa aagaaaaaag aggggagcgg	3360
atcgcgataa tgctgctttg acattctctg ctcgatctac tcagcgtctg cacgaaacgg	3420
catccgcacg gaggcgagcc caagcgtatc tgcagcaagc ggttctttcc ctcggtgatg	3480
gtggcagcat cgggtggcgg agcttgttcg gacgatggac ggtgaggagt ccctggcgat	3540
caggcggctc ccgggtgtgg agttcaacgg gtggaatgg tggcgggtgat cgggtgtaga	3600
aaacggtggc cctggcaaac atatatctac tgtaaaccct ctgctctgtt aataaaaagc	3660
acacttttca catgagttcg taattttatt gtgtagtgga aatttttacg tcatggggaa	3720
accccagaat gaaagagtat aatgtgcata tcaccggggg ttccctgtca gtacgaatgt	3780
acacaacgcg ggttacatta cgataaactt tccggtaaaa cgatgccgat acagcgtgta	3840
taacgctgat tgttacgaca aacgagttgg tatatccatt atatagtaac gaacatgctg	3900
tggatattag ttttatttgc actcgcgcga tcggcgagtg aaaccactac aggtaccagc	3960
tctaattcca gtcaatctac tagtgctacc gccaacacga ccgtatcgac atgtattaat	4020
gcctctaacg gcagtagctg gacagtacca cagctcgcgc tgcttgccgc tagcggtcgg	4080
acattatctg gactccttct cttatttacc tgctgctttt gctgcttttg gctagtacgt	4140

aaaatctgca gctgctgcg	caactcctcc gagtcagaga gcaaaacaac ccacgcgtac	4200
accaatgccg cattcacttc	ttccgacgca acgttaccca tgggcactac agggtcgtac	4260
actccccac aggacggctc	atttccacct ccgcctcggg gacgtaggct aaaccgaaac	4320
ccacgttgaa cctaacgcgg	tttcggaagg cctgagacgt cactttcaca atgacgtccg	4380
tatacacgtt catcataaaa	caccgtagag gctaaggctt cggtagggag agacctcaac	4440
tgttctgat gagcaccgt	gctctcatct cttcagactt gtcatgacct ccgtcagac	4500
taacgcgact accaccgtgc	acccgcacga cgcaaaaaac ggcagcgggc gtagtgccct	4560
gccgaccctc gtcgttttcg	gctttatcgt tacgctactt ttctttctct ttatgctcta	4620
cttttggaac aacgacgtgt	tccgtaagct gctccgtgcg cttggatcca gcgctgttg	4680
gaccgcttcg acgcgtggca	agacgaggtc atctaccgtc gtccatcacg tcgttcccag	4740
agcgacgacg agagtcgtac	taacagcgtg tcatcgtacg ttcttttacc acccgcgctc	4800
gatggcggtt ttgacaacct	ggcactgaca gaggccgtcg acagcgtgga cgactggggc	4860
accacctcgg ttttctacgc	cacgtccgac gaaacggcgg acgccgagcg ccgagactcg	4920
cagcaactgc tcatcgagct	tccgccggag ccgtcccgcc ccgacgtggt ggcggccatg	4980
cagaaagcag tgaaacgcgc	tgtacagaac gcactacgac acagccacga ctcttggcag	5040
cttcatcaga ccctgtgacg	ccagatgaac gttccttctt aaacatccga ggtagcaatg	5100
agacaggctc cgtaccgccg	gcgacgcgag agttcctgcg cgggtgctggt ccaccacgtc	5160
ggccgcgacg gcgacggcga	gggggaggca gcaaaaaaga cctgcaaaaa aaccggacgc	5220
tcagttgcgg gcatcccg	cgagaagctg cgtcgcacgg tggtcaccac cacgccggcc	5280
cgacgtttga ggcggcgaca	cacggagcag gagcaggcgg gcatgcgtct ctgtgaaaaa	5340
gggaagaaaa gaatcatcat	gtgccgccgg gagtcgctcc gaactctgcc gtggctgttc	5400
tgggtgctgt tgagctgccc	gcgactcctc gaatattctt cctcttcgtt ccccttcgcc	5460
accgctgaca ttgccgaaaa	gatgtgggccc gagaattatg agaccacgtc gccggcgccg	5520
gtgttggtcg ccgagggaga	gcaagttacc atcccctgca cggtcatgac acactcctgg	5580
cccatggtct ccattcgccg	acgtttctgt cgttcccacg acggcagcga cgagctcatc	5640
ctggacgccg tcaaaggcca	tccgctgatg aacggactcc agtaccgcct gccgtacgcc	5700
acttgaatt tctcgcaatt	gcatctcggc caaatattct cgcttacttt taacgtatcg	5760
atggacacag ccggcatgta	cgaatgcgtg ctacgcaact acagccacgg cctcatcatg	5820
caacgcttcg taattctcac	gcagctggag acgtcagccc ggcccagcga accttgctgc	5880
acaccggcgt taggtcgcta	ctcgctggga gaccagatct ggtcgccgac gccctggcgt	5940
ctacggaatc acgactgcgg	aacgtaccgc ggctttcaac gcaactactt ctatatcgcc	6000

cgcgccgacg ccgaggattg ctggaaaacc gcattgtccg acgaggaacc cgaccgctgt	6060
tggacagtga tacagcgta ccggtcccc ggcgactgct accgttcgca gccacacccg	6120
ccgaaatddd taccggtgac gccagcaccg ccggccgaca tagacaccg gatgtctccc	6180
tgggccactc ggggaatcgc ggcgtttttg gggttttgga gtatdddttac cgtatgtttc	6240
ctatgctacc tgtgttatct gcagtgttgt ggacgctggt gtcccacgcc gggaagggga	6300
cgacgaggcg gtgagggcta tcgacgccta ccgacttacg atagttaccc cgtgtttaga	6360
aagatgaaga ggtgagaaca cgtataaaat aaaaaataa tatgttaaaa aatgcagtgt	6420
gtgaagtgtg aatagtgtga ttaaaatatg cggattgaat ggggtgtggtg gttattcgga	6480
tactttgtgt catccgttgg gagcgaacgg tcattatcct atcgttacca cttggaatct	6540
aattcatcta ccaacgtggt ttgcaacgga aacatttcg tgtdttgtaa cggcaccta	6600
ggtgtgcggt ataacattac ggtaggaatc agttcgtctt tattaatagg acaccttact	6660
atacaagtat tggaatcatg gttcacaccc tgggtccaaa ataaaagtt caacaaaca	6720
cccctagggtg aactgaaac gctttataat atagatagcg aaaacattca tcgcgtatct	6780
caatatddd acacaagatg gataaaatct ctgcaagaga atcacacttg cgacctcaca	6840
aacagtacac ctacctatac atatcaagta aacgtgaaca acacgaatta cctaacta	6900
acatcctcgg gatggcaaga ccgtctaaat tacaccgtca taaatagtag acactttaac	6960
ctcacagaat cgaacataac cagcattcaa aaatatctca acactacctg catagaaaga	7020
ctccgtaact acaccttgga gtccgtatac accacaactg tgccctcaaaa cataacaaca	7080
tctcaacacg caacaaccac tatgcacaca atacctcaa atacaataac aattcaaat	7140
acaactcaaa gccatactgt acagacgccg tcttttaacg acacacataa cgtgacgaaa	7200
cacacgttaa acataagcta cgttttatca caaaaaacga ataacacaac atcacctggtg	7260
atatatgcca tacctatggg cgctacagcc acaataggcg ccggtttata tatcgggaaa	7320
cactttacgc cgtttaagtt cgtatacagag gtatggcgcg gtcagtaaag acgattcgga	7380
ttcaacacat atactcccca cgatcctcga acaccttaca gcatatgagc aaaaaacaag	7440
aaagtatagc cacaatcaca tttgggcgaa taacatgctg tcatccacta gcgtctatta	7500
atctaattgt taacgggagc tgtactgtca ccgttaaaat atccatggga atcaacgggt	7560
caaccaacgt ccatcagctt gtgattgtgc tccatctggg taaccgctgt cagccttggc	7620
gacaggtgta atcacagctg tcacataact caggaagcct ccaatcacag cagcacacat	7680
agtcctaacg ccattggcgt gtataaaagt tcggaaaact tgacggttgt acggcacgac	7740
aaatcgatgt agtgggtatgt tttccagca gagaccgtgt gcggtctctt aggttcgcta	7800

tactgtggct ggaaactggg tacctgtgaa gatggctaac taccctgttc tgccttgaa	7860
aaacttttgg cgtcgttagg ggacttttga gtatgcgggt tagtgaagtt atgtcattta	7920
tttacgttta cgatctcgta ttacaaaccg cggagaggat gataccgttc ggccccatga	7980
gttattttta ttcttcgggt aggaggcatg aagcctctga taatgctcat ctgctttgct	8040
gtgatattat tgcagcttgg agtgactaaa gtgtgtcagc ataatgaagt gcaactgggc	8100
aatgagtgtc gccctccgtg tggttcggga caaagagtta ctaaagtatg cacggattat	8160
accagtgtaa cgtgtacccc ttgcccacac ggcacgtatg tatcgggact ttacaactgt	8220
accgattgca ctcaatgtaa cgtcactcag gtcatgattc gtaactgcac ttccaccaat	8280
aataccgtat gcgcacctaa gaaccatacg tacttttcca ctccaggcgt ccaacatcac	8340
aaacaacgac agcaaaatca taccgcacat ataaccgtca aacaaggaaa aagcggtcgt	8400
catactctag cctggttgtc tctctttatc tttcttgtgg gtatcatact tttaattctc	8460
tatcttatag ccgcctatcg gagtgagaga tgccaacagt gttgctcaat cggcaaaatt	8520
ttctaccgca ccctgtaagc ttctgttgtg tgtttttaca tcacgggtacg atgaagtcac	8580
acagataatt acagatgagc tgttcattat ttttattatt ttttccaatt cctgcactaa	8640
aaaaagaagc actttacgga accgtgtctg agtatctgtg gggaatttag gtactttttg	8700
ccgacgtcag gaaaaataag tgcgcctac ataagagccc ggtgctatcg tgctgtcact	8760
ctttcttgtt gccttcgatg tacggcgtcc tggtcatta ctactccttc atcagtagcc	8820
ccagcgttat ggtaattttt aagcatcata acgccgtgca gctgttatgt gcacggaccc	8880
gagacgcact gccggatggg aacgtttaac ccatcatgcg tcgtatcacg cgaactacgg	8940
ggcatacgcc gtgttgatgg ctacatcgca aagaaagtcc ctagtgttac atcgatacag	9000
tgccgtgaca gccgtggccc tgcagctcat gcctgttgag atcgtccgca agctagatca	9060
gtcggactgg gtgcgggggtg cctggatcgt gtcagagact tttccaacta gcgaccccaa	9120
aggagtttgg agcgacgatg actcctcgat ggggtggaagt gatgattgat gatgagaacc	9180
tgacaagaaa gacgagagag aaatttagag ctgtcattgt agaattagtc tagattcctg	9240
ataataaaca gtatcgattt tgaaacctaa ttgacgtgtg atcgattttt aaacctctgt	9300
gttgtgtgat tgattggtat gtggggggat ccgatttcaa aggggggtac ttatcgggaa	9360
ttgatgtgtc atggacgcag ttttgagcga ttttccggga ataccggata ttacgaatta	9420
ctggtagtga cgtagataat aaaattataa tgcgattaat ttttggtgcg ttgattattt	9480
ttttagcata tgtgtatcat tatgaggtga atggaacaga attacgctgc agatgtcttc	9540
atagaaaatg gccgcctaataaaaattatat tgggtaatta ttggcttcat cgcgatccca	9600
gagggcccg atgcgataaa aatgaacatt tattgtatcc agacggaagg aaaccgcctg	9660

gacctggagt atgtttatcg cccgatcacc tcttctcaaa atggtttagac aaacacaacg	9720
ataataggtg gtataatggt aacataacga aatcaccagg accgagacga ataaatataa	9780
ccttgatagg tgtttagagga taatatTTaa tgtatgtttt caaacagaca agttcgTTaa	9840
aacaaaatat tacagtatgt gtttaatatg gtgctaacat gggtgcacca tccggTTtca	9900
aactcgcata tcaatctggt atcggtagca cacctgtcat taatcgcata tatgttactt	9960
accatatgtc ccctagccgt ccatgtTTta gaactagaag attacgacag gcgctgccgt	10020
tgcaacaacc aaattctggt gaataccctg ccggtcggaa ccgaattgct taagccaatc	10080
gcagcgagcg aaagctgcaa tcgtcaggaa gtgctggcta ttttaaagga caagggaaacc	10140
aagtgtctca atcctaacgc gcaagccgtg cgtcgtcaca tcaaccggct atTTTTtcgg	10200
ttaatcttag acgaggaaca acgcatttac gacgtagtgt ctaccaatat tgagttcggt	10260
gcctggccag tccctacggc ctacaaagcc tttctTTgga aatacgccaa gagactgaac	10320
taccaccact tcagactgcg ctggtgatca tgtccctatt ttaccgtgcg gtagctctgg	10380
gcagcctaag cgctttggtg tggtagagca ctagcatcct cgcagagatt aacgaaaatt	10440
cctgtcctc atcttctgcg gatcacgaag actgcgagga accggacgag atcgttcgcg	10500
aagagcaaga ctatcgggct ctgctggcct tttccctagt gatttgcggt acgctcctcg	10560
tcacttgtgt gatctgagac gtcatgctgg tagcgTTtat gagtcgggcg gtggccgaca	10620
cgccgcattt cctaaccgcg gcagcatggt gcgcttgctg ttcacgctcg tctgtctggc	10680
cctccacggg cagtctgtcg gcgctagccg cgactatgtg catgttcggc tactgagcta	10740
ccgaggcgac cccctggtct tcaagcacac tttctcggtg gtgcgtcgac ctttcaccga	10800
gctaggctgg gctgcgtgtc gcgactggga cagtatgcat tgcacaccct tctggtctac	10860
cgatctggag cagatgaccg actcgggtcg gcgttacagc acggtgagcc ccggcaagga	10920
agtgaagctt cagcttcacg ggaaccaaac cgtacagccg tcgtttctaa gctttacgtg	10980
ccgcctgcag ctagaaccg tgggtgaaaa tgttggcctc tacgtggcct acgtggtcaa	11040
cgacggcgaa cgcccacaac agTTTTttac accgcaggta gacgtggtac gctttgctct	11100
atatctagaa acactctccc ggatcggtga accgtagaa tcaggtcgcc tggcagtgga	11160
atttgatacg cctgacctag ctctggcgcc cgatttagta agcagcctct tcgtggccgg	11220
acacggcgag accgactttt acatgaactg gacgctgcgt cgcagtcaga cccactacct	11280
ggaggagatg gccttacagg tggagattct aaaacccgcg ggcgtacgtc accgcgctat	11340
tatccaccat ccgaagctac agccggggcgt tggcctgtgg atagatttct gcgtgtaccg	11400
ctacaacgcg cgctgaccc gcggctacgt acgatacacc ctgtcaccga aagcgcgctt	11460

gcccgcaaaa gcagaggggtt ggctgggtgtc actagacaga ttcacgtgtc agtacctcaa 11520  
 cacattgctg attacaatga tggcggcgat atggggtcgc gttttgataa cctacctggt 11580  
 gtcgcggcgt cggtagaggc ttgcggaaac cacgtcctcg tcacacgtcg ttgcgggaca 11640  
 tagcaagaaa tccacgtcgc cacatctcga gaatgccggc cttgcgggggt ccccttcgcg 11700  
 caacattcct ggccctggtc gcgttcgggt tgctgcttca gatagacctc agcgacgcta 11760  
 cgaatgtgac cagcagcaca aaagtcccta ctagcaccag caacagaaat aacgtcgaca 11820  
 acgccacgag tagcggaccc acaaccggga tcaacatgac caccaccac gagtcttccg 11880  
 ttcacaacgt gcgcaataac gagatcatga aagtgtgtgc tctcctcttc tacatcgtga 11940  
 caggcacctc ctttttcagc ttcatagcgg tactgatcgc ggtagtttac tcctcgtggt 12000  
 gcaagcaccg gggccgcttt cgtttcgccg acgaagaggc cgtcaacctg ttggacgaca 12060  
 cggacgacag tggcggcagc agcccgtttg gcagcgggtc ccgacgaggt tctcagatcc 12120  
 ccgccggatt ttgttctcgc agcccttctc agcggttgga aactcgggac tgggacgagg 12180  
 aggaggaggc gtccgcggcc cgcgagcgca tgaaacatga tcctgagaac gtcattctatt 12240  
 tcagaaagga tggcaacttg gacacgtcgt tcgtgaatcc caattatggg agaggctcgc 12300  
 ctttgaccat cgaatctcac ctctcggaca atgaggagga ccccatcagg tactacgttt 12360  
 cgggtgtacga tgaactgacc gcctcggaaa tggaagaacc ttcgaacagc accagctggc 12420  
 agattcccaa actaatgaaa gttgccatgc aaccgctctc gctcagagat cccgagtacg 12480  
 actaggcttt tttttttgtc tttcggttcc aactctttcc ccgccccatc acctcgcttg 12540  
 tactatgtgt atgatgtctc ataataaagc tttctttctc agtctgcaac atgcagctgt 12600  
 gtcgggtgtg gctgtctgtt tgtctgtgcg ccgtgggtgt gggtcagtgc cagcgggaaa 12660  
 ccgcggaaaa aaacgattat taccgagtac cgcattactg ggacgcgtgc tctcgcgcgc 12720  
 tgcccgacca aaccggttac aagtatgtgg aacagctcgt ggacctcacg ttgaactacc 12780  
 actacgatgc gagccacggc ttggacaact ttgacgtgct caagaggtga gggtagcgcgc 12840  
 taaagggtgca tgacaacggg aaggtaaggc cgaacgggta acggctaagt aaccgcatgg 12900  
 ggtatgaaat gacgtttgga acctgtgctt gcagaatcaa cgtgaccgag gtgtcgttgc 12960  
 tcatcagcga ctttagacgt cagaaccgtc gcggcggcac caacaaaagg accacgttca 13020  
 acgccgccgg ttcgctggcg ccacacgccg ggagcctcga gttcagcgtg cggctctttg 13080  
 ccaactagcc tgcgtcacgg gaaataatat gctgcggctt ctgcttcgtc accactttca 13140  
 ctgctgtctt ctgtgcgcgg tttgggcaac gccctgtctg gcgtctccgt ggtcgacgct 13200  
 aacggcaaac cagaatccgt ccccgccatg gtctaaactg acgtattcca aaccgcatga 13260  
 cgcggcgacg ttttactgtc cttttctcta tccctcgccc ccacggtccc ccttgcaatt 13320



ctcgggggttc cagcaggtat caacgggtcc cgagtgtcgc aacgagaccc tgtatctgct	13380
gtacaaccgg gaaggccaga ccttggtgga gagaagctcc acctgggtga aaaaggtgat	13440
ctggtatctg agcggtcgca accagaccat cctccaacgg atgccccaaa cggcttcgaa	13500
accgagcgac ggaaacgtgc agatcagcgt ggaagacgcc aagatttttg gagcgacat	13560
ggtgcccaag cagaccaagc tgctacgctt cgtcgtcaac gatggcacgc gttatcagat	13620
gtgtgtgatg aagctggaga gctgggcca cgtcttcggt gactacagcg tgtcttttca	13680
ggtgcgattg acgttcaccg aggccaataa ccagacttac accttctgta cccatcccaa	13740
tctcatcatt tgagcccgtc gcgcgcgcag ggaattttga aaaccgcgcg tcatgagtcc	13800
caaagacctg acgccgttct tgacgacggt gtggctgcta ttgggtcaca gccgcgtgcc	13860
gcgggtgcgc gcagaagaat gttgcgaatt cataaacgtc aaccacccgc cggaacgctg	13920
ttacgatttc aaaatgtgca atcgcttcac cgtcgcgtac gtattttcat gattgtctgc	13980
gttctgtggt gcgtctggat ttgtctctcg acgtttctga tagccatggt ccatcgacga	14040
tcctcgggaa tgccagagta gattttcatg aatccacagg ctgcggtgtc cggacggcga	14100
agtctgttac agtcccgaaga aaacggctga gattcgcggg atcgtcacca ccatgaccca	14160
ttcattgaca cgccaggtcg tacacaacaa actgacgagc tgcaactaca atccgtaagt	14220
ctcttcctcg agggccttac agcctatggg agagtaagac agagaggagc aaaacatcat	14280
taaaaaaaaa agtctaattt cacgttttgt accccccttc ccctccgtgt tgtagcccat	14340
cggccgcggc gatctcctag taacactcgt ccgacacttc caccatctcc agctcggccg	14400
gcggttcggc atcctctacc agcggcgtcg tctcatcttt gccgcagcag cggacgcaca	14460
ccttctccag gcagaacgcc accagctgcc gccgaacgta ccacaggtac acgtgcagac	14520
ctgccaacag gactacggag gtcacgacca ccacgacgca cacgggaatc cagggatcga	14580
gattgttgct ggaactcatg gctatcgcca ccgacgtgcc cgcgtctgtc tcaccgccgc	14640
tcgcccgatg tcgcgcggct tgttatacgc tagcccgtcg ccgcctcggg gcacggtgcc	14700
ctcctacca cgtaacttcc tccgtgactt aaagtcgcgt gtggtagatc tcctgctccg	14760
tggacgaacc gtccggcagg atagcgggta aggattcggg gctaaggccg tgtcgccaac	14820
gtcgaatgct acgttgcaac agcttcgacg gacggccatc ccctctctca tcgcaataat	14880
aaaacaccag cagcgcgcac gacgcgatca cggtgacacc catgattaga cccacgcaga	14940
tagccagccc cgctagcgta tctagcgcca tcccgttcgc tcccgttgtc tcctgagcga	15000
agcaacttct cgggtcccgt tttcaacagt ttttgtttcc ttctccgcga ctagatgtta	15060
acgccgcggc tctttccggc cgtgctctac ctctggcg gcgtgtctg ggttgagatg	15120

ttctgcctcg tcgccgtagc cgtcgtcgag cgcgagatcg cctgggcgct gctgctgcgg 15180  
 atgctggctg ttggcctgat ggtggaagtc ggcgccgcgc cgccttgac cttcgtgcgt 15240  
 tgtcttgctc atcagcgtc cttccccgtg cttacggcct tcccctgaaa cccacgttaa 15300  
 ccgaccgtcc caaaaacgcc ggtgttaaca caggaaaaaa agaaaccacg caggaaccgc 15360  
 gcaggaacca cgcggaacat gggacactat ctggaaatcc tgttcaacgt catcgtcttc 15420  
 actctgctgc tcggcgctcat ggtcagtatc gtcgcttggt acttcacgtg aaccaccgtc 15480  
 gtcccggttt aaaaaccatc atcgacggcc gttataaagc caccgggaca cgcgccgcgg 15540  
 cacttgccca cggcgctgct tcagggaaac tctcttcct tctgctcttc ctccctcacc 15600  
 gcagggatcg tttccctcga ccagggactc gccgaagcaa ccgccggagc aacctggagg 15660  
 agtcgcggca tgacggcgcc caagtgtgtc accaccagta cttatctggt caagaccaag 15720  
 gaacagccct ggtggcccga caacgccatc aggagatggt ggatcagtgt tgctatcgtc 15780  
 atcttcacg gagtctgtct ggtggccctg atgtacttta cgcagcagca ggcacgcagc 15840  
 gggagcagca gcggctagac aagtctctgg cggctacagc tccaagcgcc gtagccgggc 15900  
 cgctgccga tcgcgacgtc gtggaccatc gaacagagac tcacgcgtac gagaccccgga 15960  
 ggtacgccac gcggtgccta acgcggtata ccacaccgt acggtctgca gtgcggcgta 16020  
 caacgtgtgg aaaacgcgtt gcgtcgaga gtccgccacg ttctgtctt gtcgtcccc 16080  
 aatcgtctcc cgcacacccc ccgcgacacc cagagggcgg gtgagccaag tattcttaag 16140  
 gccgttcttt gttccatagc ccataaattg ttgattccgg agctcgttg gcgcgaaata 16200  
 gccggataag gggagcaaca accgttggcg aaagccgtcc cgtcattca gtccgggttt 16260  
 cgcgtccagt cggacgtgtg accgttgggc aacggaacgg cgtttcactg ccaaaatcgt 16320  
 atcgggtagt gtacgagacg tcggcggtgc agaatgcgac tcgcggcgta gctcgccgtc 16380  
 gctatgcggc tcgtcgccgt gtggcgcggc ctggccggct gtctgcgtcc agatctgttg 16440  
 gccttttggt tctctggct gctgctgcgt gtgtgctttg gtagacgcgg tggcagtttg 16500  
 cggctctgcg taagtgagga tgcgccgag caaacgcact tgcggcgct gggcggcacg 16560  
 cgtgtcattg taggttcgtt gccagatggc aagtgtgtc aacagcaggc gttgtgggcg 16620  
 gtcggtgtat ttttgtgggt tgcggtgaga gtcggcactc ggtgttttgt gagtcatttc 16680  
 aactatctgt gttgctttga gcagcgtcca gaacagcgac gcgactttgg ggatggcctc 16740  
 gtgctcacct ccgcggagag cgcgccgga cctgctcgtc agcagcgagc tacgcagacg 16800  
 gaatatctgg aggagagtta cgtgtgtcac aggagagcgc gggctctccg cggtaacgac 16860  
 ggcggtgtcg tcgacacgtg tgcggcctgt tgtgctctgc ggaaaagtgc cggctctcgga 16920  
 gaccgtggac gaaaaagaga acgcagcagc taccgctggc ggcggcggcg cggctctcgga 16980

cgttgatgtt cgacgttgtg agcactcggg aacagcgggtg aggcagaagg tcgattctcc 17040  
 agggaacgac agtcgatgcg tggtagccgc agcaggtgag gttggggcgg acaacgtgtt 17100  
 gcggtattgtg gcgagaacgt cgtcctcccc ttcttcaccg cccacccac cctcggttg 17160  
 tgtttctttt ttcttgtgtc ctgcagatag ttccacggac agcgacggca agtccataat 17220  
 cagcgggtgtg caagtgggtg aacacgacga agatatcatc gcgccgcaga gtttgtggtg 17280  
 cacggcggtt aaggaagccc tctgggatgt ggctctgttg gaagtgccgc gttgggcgtg 17340  
 gcagggcttg aagaggtggc gcaacagcga ggccggggcgt cgatggagtg ctgggtctgc 17400  
 gtcggcttcc agcttgtctg acttggcggg cgaggccgtt ggagaatttg tgggatcgg 17460  
 cgtcgcgtac gtgatccttg aacgtctgtg gttggcagcc agaggttggg tgtgcgaaac 17520  
 aggtgtggaa gccgaggagg ccatgtcgcg gcggcgacag cgcagtctgt ggcgtattgt 17580  
 tctctcgtg aggcgacggc gaatgcagca gacggtgttc gatggagatg gcgtgcgggg 17640  
 aagaaagcgc cgtgttgtga gcagacgacg taggatgcgg gacgtcggag cacatgggccc 17700  
 atgtgtggtg gcagatggcg gtgtccgctg gtgtctgctg cggcagtga tagacgaagc 17760  
 aacatgtcgc tgtgaagaga tagagtgtga gcatagctgc atgcagcgtt gcgtgtataa 17820  
 gcggggggga ttaagacgtt aataaagaat agcggcggtt ctgatagggc gaccgctgaa 17880  
 gtgagctgcg tgtgcgtgtg gtttgtggag tccccgccgc ccccggtccc gtgtccgccc 17940  
 gcaaagcccc ccgntccgc aactcctgg ccgcgcaacc ctgcgtcgtg caaaagcccc 18000  
 ccgtccccgc acacccccgc gaccgccggt cccgcgagtc cccgtccccg ccgcaaaagg 18060  
 ccccgctcct cgccgcaaac acccccgta ccccgctccc tcagnccggg tccgcgagtc 18120  
 cccgttccca gcgtaatccc cgtacccgca acgncccggg cccaccgtcg tcccgcacac 18180  
 ccccgctccc ccagcccggt gccagcgtg cgaaaaaagc tccgtccctc acacccgcag 18240  
 aaagatccct cagcgcgggt aaaccccgtc cccagcgcg tgcgctgac aaagaccatg 18300  
 ggacgacacg cacaggca 18318

<210> 2  
 <211> 214  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 2

Met Leu Arg Leu Leu Leu Arg His His Phe His Cys Leu Leu Leu Cys  
 1 5 10 15

Ala Val Trp Ala Thr Pro Cys Leu Ala Ser Pro Trp Ser Thr Leu Thr  
 20 25 30

Ala Asn Gln Asn Pro Ser Pro Pro Trp Ser Lys Leu Thr Tyr Ser Lys  
 35 40 45

Pro His Asp Ala Ala Thr Phe Tyr Cys Pro Phe Leu Tyr Pro Ser Pro  
 50 55 60

Pro Arg Ser Pro Leu Gln Phe Ser Gly Phe Gln Gln Val Ser Thr Gly  
 65 70 75 80

Pro Glu Cys Arg Asn Glu Thr Leu Tyr Leu Leu Tyr Asn Arg Glu Gly  
 85 90 95

Gln Thr Leu Val Glu Arg Ser Ser Thr Trp Val Lys Lys Val Ile Trp  
 100 105 110

Tyr Leu Ser Gly Arg Asn Gln Thr Ile Leu Gln Arg Met Pro Gln Thr  
 115 120 125

Ala Ser Lys Pro Ser Asp Gly Asn Val Gln Ile Ser Val Glu Asp Ala  
 130 135 140

Lys Ile Phe Gly Ala His Met Val Pro Lys Gln Thr Lys Leu Leu Arg  
 145 150 155 160

Phe Val Val Asn Asp Gly Thr Arg Tyr Gln Met Cys Val Met Lys Leu  
 165 170 175

Glu Ser Trp Ala His Val Phe Arg Asp Tyr Ser Val Ser Phe Gln Val  
 180 185 190

Arg Leu Thr Phe Thr Glu Ala Asn Asn Gln Thr Tyr Thr Phe Cys Thr  
 195 200 205

His Pro Asn Leu Ile Ile  
 210

<210> 3  
 <211> 179  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 3

Met Pro Ala Leu Arg Gly Pro Leu Arg Ala Thr Phe Leu Ala Leu Val  
 1 5 10 15

Ala Phe Gly Leu Leu Leu Gln Ile Asp Leu Ser Asp Ala Thr Asn Val  
 20 25 30

Thr Ser Ser Thr Lys Val Pro Thr Ser Thr Ser Asn Arg Asn Asn Val  
 35 40 45

Asp Asn Ala Thr Ser Ser Gly Pro Thr Thr Gly Ile Asn Met Thr Thr  
 50 55 60

Thr His Glu Ser Ser Val His Asn Val Arg Asn Asn Glu Ile Met Lys  
 65 70 75 80

Val Leu Ala Ile Leu Phe Tyr Ile Val Thr Gly Thr Ser Ile Phe Ser  
 85 90 95

Phe Ile Ala Val Leu Ile Ala Val Val Tyr Ser Ser Cys Cys Lys His  
 100 105 110

Pro Gly Arg Phe Arg Phe Ala Asp Glu Glu Ala Val Asn Leu Leu Asp  
 115 120 125

Asp Thr Asp Asp Ser Gly Gly Ser Ser Pro Phe Gly Ser Gly Ser Arg  
 130 135 140

Arg Gly Ser Gln Ile Pro Pro Asp Phe Val Pro Arg Ala Leu Ile Ser  
 145 150 155 160

Gly Trp Lys Leu Gly Thr Gly Thr Arg Arg Arg Arg Pro Arg Pro  
 165 170 175

Ala Ser Ala

<210> 4  
 <211> 20  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 4

Asn Met Ile Leu Arg Thr Ser Ser Ile Ser Glu Arg Met Ala Thr Trp  
 1 5 10 15

Thr Arg Arg Ser  
 20

<210> 5  
 <211> 9

<212> PRT  
<213> Human cytomegalovirus

<400> 5

Ile Pro Ile Met Gly Glu Ala Arg Leu  
1 5

<210> 6  
<211> 23  
<212> PRT  
<213> Human cytomegalovirus

<400> 6

Pro Ser Asn Leu Thr Ser Arg Thr Met Arg Arg Thr Pro Ser Gly Thr  
1 5 10 15

Thr Phe Arg Cys Thr Met Asn  
20

<210> 7  
<211> 18  
<212> PRT  
<213> Human cytomegalovirus

<400> 7

Pro Pro Arg Lys Trp Lys Asn Leu Arg Thr Ala Pro Ala Gly Arg Phe  
1 5 10 15

Pro Asn

<210> 8  
<211> 16  
<212> PRT  
<213> Human cytomegalovirus

<400> 8

Lys Leu Pro Cys Asn Pro Ser Arg Ser Glu Ile Pro Ser Thr Thr Arg  
1 5 10 15

<210> 9  
<211> 257  
<212> PRT  
<213> Human cytomegalovirus

<400> 9

Met Gly Cys Asp Val His Asp Pro Ser Trp Gln Cys Gln Trp Gly Val  
1 5 10 15

Pro Thr Ile Ile Val Ala Trp Ile Thr Cys Ala Ala Leu Gly Ile Trp  
20 25 30

Cys Leu Ala Gly Ser Ser Ala Asp Val Ser Ser Gly Pro Gly Ile Ala  
35 40 45

Ala Val Val Gly Cys Ser Val Phe Met Ile Phe Leu Cys Ala Tyr Leu  
50 55 60

Ile Arg Tyr Arg Glu Phe Phe Lys Asp Ser Val Ile Asp Leu Leu Thr  
65 70 75 80

Cys Arg Trp Val Arg Tyr Cys Ser Cys Ser Cys Lys Cys Ser Cys Lys  
85 90 95

Cys Ile Ser Gly Pro Cys Ser Arg Cys Cys Ser Ala Cys Tyr Lys Glu  
100 105 110

Thr Met Ile Tyr Asp Met Val Gln Tyr Gly His Arg Arg Arg Pro Gly  
115 120 125

His Gly Asp Asp Pro Asp Arg Val Ile Cys Glu Ile Val Glu Ser Pro  
130 135 140

Pro Val Ser Ala Pro Thr Val Ser Val Pro Pro Pro Ser Glu Glu Ser  
145 150 155 160

His Gln Pro Val Ile Pro Pro Gln Pro Pro Ala Pro Thr Ser Glu Pro  
165 170 175

Lys Pro Lys Lys Gly Arg Ala Lys Asp Lys Pro Lys Gly Arg Pro Lys  
180 185 190

Asp Lys Pro Pro Cys Glu Pro Thr Val Ser Ser Gln Pro Pro Ser Gln  
195 200 205

Pro Thr Ala Met Pro Gly Gly Pro Pro Asp Ala Pro Pro Pro Ala Met  
210 215 220

Pro Gln Met Pro Pro Gly Val Ala Glu Ala Val Gln Ala Ala Val Gln  
225 230 235 240

Ala Ala Val Ala Ala Ala Leu Gln Gln Gln Gln Gln His Gln Thr Gly  
245 250 255

Thr

<210> 10  
 <211> 175  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 10

Met Ala Arg Thr Arg Glu Ala Ser Pro Val Pro Pro Arg Ser Pro Met  
 1 5 10 15

Pro Ser His Ile His Thr Met Ile Phe Ser Pro Ala Trp Asn Leu Lys  
 20 25 30

Leu Arg Val Gly Lys Gly Arg Cys Thr Asp Ile Tyr Ala Leu Asp Phe  
 35 40 45

Trp Lys Arg His Phe Leu Ala Arg Asn Val Phe Ile Val Gln Thr Leu  
 50 55 60

Arg Lys Glu Met Cys Ala Lys Ser Glu Asn Ser Leu Ser His Arg Gly  
 65 70 75 80

Arg Val Thr Phe Arg Ser Asp Ala Ala Ala Val Val Val Glu Pro Arg  
 85 90 95

Pro Arg Pro Pro Ala Arg Gln Leu Val Pro Pro Arg Pro Arg Arg Val  
 100 105 110

Ala Ser Ala Ala Trp Arg Gly Glu Ala Arg Arg Ala Asp Arg Arg Ala  
 115 120 125

Leu Pro Ser Ala Ala Thr Val Val Val Asn Ser Pro Ser Val Arg Thr  
 130 135 140

Glu Val Cys Leu Ser Val Tyr Pro Ser Val Tyr Leu Ser Pro Tyr Leu  
 145 150 155 160

Ser Ser Val Trp Val Pro Met Ser Val Leu Ala Ala Ala Val Gly  
 165 170 175

<210> 11  
 <211> 328  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 11



Met Ser Val His Arg Pro Phe Pro Thr Arg Ser Leu Arg Phe Gln Ala  
 1 5 10 15

Gly Glu Lys Ile Met Val Trp Ile Trp Leu Gly Ile Gly Leu Leu Gly  
 20 25 30

Gly Thr Gly Leu Ala Ser Leu Val Leu Ala Ile Ser Leu Phe Thr Gln  
 35 40 45

Arg Arg Gly Arg Lys Arg Ser Asp Glu Thr Ser Ser Arg Gly Arg Leu  
 50 55 60

Pro Gly Ala Ala Ser Asp Lys Arg Gly Ala Cys Ala Cys Cys Tyr Arg  
 65 70 75 80

Asn Pro Lys Glu Asp Val Val Glu Pro Leu Asp Leu Glu Leu Gly Leu  
 85 90 95

Met Arg Val Asp Thr His Pro Pro Thr Pro Gln Val Pro Arg Cys Thr  
 100 105 110

Ser Leu Tyr Ile Gly Glu Asp Gly Leu Pro Ile Asp Lys Pro Glu Phe  
 115 120 125

Pro Pro Ala Arg Phe Glu Ile Pro Asp Val Ser Thr Pro Gly Thr Pro  
 130 135 140

Thr Ser Ile Gly Arg Ser Pro Ser His Cys Ser Ser Ser Ser Leu  
 145 150 155 160

Ser Ser Ser Thr Ser Val Asp Thr Val Leu Tyr Gln Pro Pro Pro Ser  
 165 170 175

Trp Lys Pro Pro Pro Pro Gly Arg Lys Lys Arg Pro Pro Thr Pro  
 180 185 190

Pro Val Arg Ala Pro Thr Thr Arg Leu Ser Ser His Arg Pro Pro Thr  
 195 200 205

Pro Ile Pro Ala Pro Arg Lys Asn Leu Ser Thr Pro Pro Thr Lys Lys  
 210 215 220

Thr Pro Pro Pro Thr Lys Pro Lys Pro Val Gly Trp Thr Pro Pro Val  
 225 230 235 240

Thr Pro Arg Pro Phe Pro Lys Thr Pro Thr Pro Gln Lys Pro Pro Arg

245	250	255
Asn Pro Arg Leu Pro Arg Thr Val Gly Leu Glu Asn Leu Ser Lys Val		
260	265	270
Gly Leu Ser Cys Pro Cys Pro Arg Pro Arg Thr Pro Thr Glu Pro Thr		
275	280	285
Thr Leu Pro Ile Val Ser Val Ser Glu Leu Ala Pro Pro Pro Arg Trp		
290	295	300
Ser Asp Ile Glu Glu Leu Leu Glu Gln Ala Val Gln Ser Val Met Lys		
305	310	315
320		
Asp Ala Glu Ser Met Gln Met Thr		
325		
<210> 12		
<211> 240		
<212> PRT		
<213> Human cytomegalovirus		
<400> 12		
Met Ser Val Lys Gly Val Glu Met Pro Glu Met Thr Trp Asp Leu Asp		
1	5	10
15		
Val Arg Asn Lys Trp Arg Arg Arg Lys Ala Leu Ser Arg Ile His Arg		
20	25	30
Phe Trp Glu Cys Arg Leu Arg Val Trp Trp Leu Ser Asp Ala Gly Val		
35	40	45
Arg Glu Thr Asp Pro Pro Arg Pro Arg Arg Arg Pro Thr Trp Met Thr		
50	55	60
Ala Val Phe His Val Ile Cys Ala Val Leu Leu Thr Leu Met Ile Met		
65	70	75
80		
Ala Ile Gly Ala Leu Ile Ala Tyr Leu Arg Tyr Tyr His Gln Asp Ser		
85	90	95
Trp Arg Asp Met Leu His Asp Leu Phe Cys Gly Cys His Tyr Pro Glu		
100	105	110
Lys Cys Arg Arg His His Glu Arg Gln Arg Arg Arg Arg Gln Ala Met		
115	120	125

Asp Val Pro Asp Pro Glu Leu Gly Asp Pro Ala Arg Arg Pro Leu Asn  
 130 135 140

Gly Ala Met Tyr Tyr Gly Ser Gly Cys Arg Phe Asp Thr Val Glu Met  
 145 150 155 160

Val Asp Glu Thr Arg Pro Ala Pro Pro Ala Leu Ser Ser Pro Glu Thr  
 165 170 175

Gly Asp Asp Ser Asn Asp Asp Ala Val Ala Gly Gly Gly Ala Gly Gly  
 180 185 190

Val Thr Ser Pro Ala Thr Arg Thr Thr Ser Pro Asn Ala Leu Leu Pro  
 195 200 205

Glu Trp Met Asp Ala Val His Val Ala Val Gln Ala Ala Val Gln Ala  
 210 215 220

Thr Val Gln Val Ser Gly Pro Arg Glu Asn Ala Val Ser Pro Ala Thr  
 225 230 235 240

<210> 13  
 <211> 96  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 13

Met Ala Thr Ile Ser Thr Ser Ile Thr Pro Met Met Gly Asn Pro Thr  
 1 5 10 15

Phe Ser Gly Arg Ser Ser Met Val Thr Val Leu Cys Pro Asp Leu Arg  
 20 25 30

Pro Ser Leu Ser Leu Leu Tyr Ser Thr Arg Ala Gly Thr Ala Pro Ser  
 35 40 45

Thr Leu Leu Arg Ser Gly Arg Tyr Gly Val Leu Pro Arg Ala Thr Tyr  
 50 55 60

Leu His Gly Arg Leu Asn Gly Gly Leu Asp Arg His Met His Arg Ile  
 65 70 75 80

His Pro Phe Trp Gln Gln Cys Val Arg Arg Arg Arg Thr Ser Arg Gly  
 85 90 95

<210> 14

<211> 169  
<212> PRT  
<213> Human cytomegalovirus

<400> 14

Met Asp Asp Leu Pro Leu Asn Val Gly Leu Pro Ile Ile Gly Val Met  
1 5 10 15

Leu Val Leu Ile Val Ala Ile Leu Cys Tyr Leu Ala Tyr His Trp His  
20 25 30

Asp Thr Phe Lys Leu Val Arg Met Phe Leu Ser Tyr Arg Trp Leu Ile  
35 40 45

Arg Cys Cys Glu Leu Tyr Gly Glu Tyr Glu Arg Arg Phe Ala Asp Leu  
50 55 60

Ser Ser Leu Gly Leu Gly Ala Val Arg Arg Glu Ser Asp Arg Arg Tyr  
65 70 75 80

Arg Phe Ser Glu Arg Pro Asp Glu Ile Leu Val Arg Trp Glu Glu Val  
85 90 95

Ser Ser Gln Cys Ser Tyr Ala Ser Ser Arg Ile Thr Asp Arg Arg Val  
100 105 110

Gly Ser Ser Ser Ser Ser Val His Val Ala Ser Gln Arg Asn Ser  
115 120 125

Val Pro Pro Pro Asp Met Ala Val Thr Ala Pro Leu Thr Asp Val Asp  
130 135 140

Leu Leu Lys Pro Val Thr Gly Ser Ala Thr Gln Phe Thr Thr Val Ala  
145 150 155 160

Met Val His Tyr His Gln Glu Tyr Thr  
165

<210> 15  
<211> 135  
<212> PRT  
<213> Human cytomegalovirus

<400> 15

Met Leu Trp Ile Leu Val Leu Phe Ala Leu Ala Ala Ser Ala Ser Glu  
1 5 10 15

Thr Thr Thr Gly Thr Ser Ser Asn Ser Ser Gln Ser Thr Ser Ala Thr  
 20 25 30

Ala Asn Thr Thr Val Ser Thr Cys Ile Asn Ala Ser Asn Gly Ser Ser  
 35 40 45

Trp Thr Val Pro Gln Leu Ala Leu Leu Ala Ala Ser Gly Trp Thr Leu  
 50 55 60

Ser Gly Leu Leu Leu Leu Phe Thr Cys Cys Phe Cys Cys Phe Trp Leu  
 65 70 75 80

Val Arg Lys Ile Cys Ser Cys Cys Gly Asn Ser Ser Glu Ser Glu Ser  
 85 90 95

Lys Thr Thr His Ala Tyr Thr Asn Ala Ala Phe Thr Ser Ser Asp Ala  
 100 105 110

Thr Leu Pro Met Gly Thr Thr Gly Ser Tyr Thr Pro Pro Gln Asp Gly  
 115 120 125

Ser Phe Pro Pro Pro Pro Arg  
 130 135

<210> 16  
 <211> 114  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 16

Met Thr Pro Ala Gln Thr Asn Ala Thr Thr Thr Val His Pro His Asp  
 1 5 10 15

Ala Lys Asn Gly Ser Gly Gly Ser Ala Leu Pro Thr Leu Val Val Phe  
 20 25 30

Gly Phe Ile Val Thr Leu Leu Phe Phe Leu Phe Met Leu Tyr Phe Trp  
 35 40 45

Asn Asn Asp Val Phe Arg Lys Leu Leu Arg Ala Leu Gly Ser Ser Ala  
 50 55 60

Val Ala Thr Ala Ser Thr Arg Gly Lys Thr Arg Ser Ser Thr Val Val  
 65 70 75 80

His His Val Val Pro Arg Ala Thr Thr Arg Val Val Leu Thr Ala Cys  
 85 90 95

His Arg Thr Phe Phe Tyr His Pro Arg Pro Met Ala Val Leu Thr Thr  
 100 105 110

Arg His

<210> 17  
 <211> 425  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 17

Met Arg Gln Val Ala Tyr Arg Arg Arg Arg Glu Ser Ser Cys Ala Val  
 1 5 10 15

Leu Val His His Val Gly Arg Asp Gly Asp Gly Glu Gly Glu Ala Ala  
 20 25 30

Lys Lys Thr Cys Lys Lys Thr Gly Arg Ser Val Ala Gly Ile Pro Gly  
 35 40 45

Glu Lys Leu Arg Arg Thr Val Val Thr Thr Thr Pro Ala Arg Arg Leu  
 50 55 60

Ser Gly Arg His Thr Glu Gln Glu Gln Ala Gly Met Arg Leu Cys Glu  
 65 70 75 80

Lys Gly Lys Lys Arg Ile Ile Met Cys Arg Arg Glu Ser Leu Arg Thr  
 85 90 95

Leu Pro Trp Leu Phe Trp Val Leu Leu Ser Cys Pro Arg Leu Leu Glu  
 100 105 110

Tyr Ser Ser Ser Ser Phe Pro Phe Ala Thr Ala Asp Ile Ala Glu Lys  
 115 120 125

Met Trp Ala Glu Asn Tyr Glu Thr Thr Ser Pro Ala Pro Val Leu Val  
 130 135 140

Ala Glu Gly Glu Gln Val Thr Ile Pro Cys Thr Val Met Thr His Ser  
 145 150 155 160

Trp Pro Met Val Ser Ile Arg Ala Arg Phe Cys Arg Ser His Asp Gly  
 165 170 175

Ser Asp Glu Leu Ile Leu Asp Ala Val Lys Gly His Arg Leu Met Asn  
 180 185 190

Gly Leu Gln Tyr Arg Leu Pro Tyr Ala Thr Trp Asn Phe Ser Gln Leu  
 195 200 205

His Leu Gly Gln Ile Phe Ser Leu Thr Phe Asn Val Ser Met Asp Thr  
 210 215 220

Ala Gly Met Tyr Glu Cys Val Leu Arg Asn Tyr Ser His Gly Leu Ile  
 225 230 235 240

Met Gln Arg Phe Val Ile Leu Thr Gln Leu Glu Thr Leu Ser Arg Pro  
 245 250 255

Asp Glu Pro Cys Cys Thr Pro Ala Leu Gly Arg Tyr Ser Leu Gly Asp  
 260 265 270

Gln Ile Trp Ser Pro Thr Pro Trp Arg Leu Arg Asn His Asp Cys Gly  
 275 280 285

Thr Tyr Arg Gly Phe Gln Arg Asn Tyr Phe Tyr Ile Gly Arg Ala Asp  
 290 295 300

Ala Glu Asp Cys Trp Lys Pro Ala Cys Pro Asp Glu Glu Pro Asp Arg  
 305 310 315 320

Cys Trp Thr Val Ile Gln Arg Tyr Arg Leu Pro Gly Asp Cys Tyr Arg  
 325 330 335

Ser Gln Pro His Pro Pro Lys Phe Leu Pro Val Thr Pro Ala Pro Pro  
 340 345 350

Ala Asp Ile Asp Thr Gly Met Ser Pro Trp Ala Thr Arg Gly Ile Ala  
 355 360 365

Ala Phe Leu Gly Phe Trp Ser Ile Phe Thr Val Cys Phe Leu Cys Tyr  
 370 375 380

Leu Cys Tyr Leu Gln Cys Cys Gly Arg Trp Cys Pro Thr Pro Gly Arg  
 385 390 395 400

Gly Arg Arg Gly Gly Glu Gly Tyr Arg Arg Leu Pro Thr Tyr Asp Ser  
 405 410 415

Tyr Pro Gly Val Arg Lys Met Lys Arg

420

425

<210> 18  
 <211> 306  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 18

Met Arg Ile Glu Trp Val Trp Trp Leu Phe Gly Tyr Phe Val Ser Ser  
 1 5 10 15

Val Gly Ser Glu Arg Ser Leu Ser Tyr Arg Tyr His Leu Glu Ser Asn  
 20 25 30

Ser Ser Thr Asn Val Val Cys Asn Gly Asn Ile Ser Val Phe Val Asn  
 35 40 45

Gly Thr Leu Gly Val Arg Tyr Asn Ile Thr Val Gly Ile Ser Ser Ser  
 50 55 60

Leu Leu Ile Gly His Leu Thr Ile Gln Val Leu Glu Ser Trp Phe Thr  
 65 70 75 80

Pro Trp Val Gln Asn Lys Ser Tyr Asn Lys Gln Pro Leu Gly Asp Thr  
 85 90 95

Glu Thr Leu Tyr Asn Ile Asp Ser Glu Asn Ile His Arg Val Ser Gln  
 100 105 110

Tyr Phe His Thr Arg Trp Ile Lys Ser Leu Gln Glu Asn His Thr Cys  
 115 120 125

Asp Leu Thr Asn Ser Thr Pro Thr Tyr Thr Tyr Gln Val Asn Val Asn  
 130 135 140

Asn Thr Asn Tyr Leu Thr Leu Thr Ser Ser Gly Trp Gln Asp Arg Leu  
 145 150 155 160

Asn Tyr Thr Val Ile Asn Ser Thr His Phe Asn Leu Thr Glu Ser Asn  
 165 170 175

Ile Thr Ser Ile Gln Lys Tyr Leu Asn Thr Thr Cys Ile Glu Arg Leu  
 180 185 190

Arg Asn Tyr Thr Leu Glu Ser Val Tyr Thr Thr Thr Val Pro Gln Asn  
 195 200 205



Ile Thr Thr Ser Gln His Ala Thr Thr Thr Met His Thr Ile Pro Pro  
 210 215 220

Asn Thr Ile Thr Ile Gln Asn Thr Thr Gln Ser His Thr Val Gln Thr  
 225 230 235 240

Pro Ser Phe Asn Asp Thr His Asn Val Thr Lys His Thr Leu Asn Ile  
 245 250 255

Ser Tyr Val Leu Ser Gln Lys Thr Asn Asn Thr Thr Ser Pro Trp Ile  
 260 265 270

Tyr Ala Ile Pro Met Gly Ala Thr Ala Thr Ile Gly Ala Gly Leu Tyr  
 275 280 285

Ile Gly Lys His Phe Thr Pro Val Lys Phe Val Tyr Glu Val Trp Arg  
 290 295 300

Gly Gln  
 305

<210> 19  
 <211> 92  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 19

Met Ala Arg Ser Val Lys Thr Ile Arg Ile Gln His Ile Tyr Ser Pro  
 1 5 10 15

Arg Ser Ser Asn Thr Leu Gln His Met Ser Lys Lys Gln Glu Ser Ile  
 20 25 30

Ala Thr Ile Thr Phe Gly Arg Ile Thr Cys Cys His Pro Leu Ala Ser  
 35 40 45

Ile Asn Leu Met Phe Asn Gly Ser Cys Thr Val Thr Val Lys Ile Ser  
 50 55 60

Met Gly Ile Asn Gly Ser Thr Asn Val His Gln Leu Val Ile Val Leu  
 65 70 75 80

His Leu Gly Asn Arg Cys Gln Pro Trp Arg Gln Val  
 85 90

<210> 20

<211> 176  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 20

Met Lys Pro Leu Ile Met Leu Ile Cys Phe Ala Val Ile Leu Leu Gln  
 1 5 10 15

Leu Gly Val Thr Lys Val Cys Gln His Asn Glu Val Gln Leu Gly Asn  
 20 25 30

Glu Cys Cys Pro Pro Cys Gly Ser Gly Gln Arg Val Thr Lys Val Cys  
 35 40 45

Thr Asp Tyr Thr Ser Val Thr Cys Thr Pro Cys Pro Asn Gly Thr Tyr  
 50 55 60

Val Ser Gly Leu Tyr Asn Cys Thr Asp Cys Thr Gln Cys Asn Val Thr  
 65 70 75 80

Gln Val Met Ile Arg Asn Cys Thr Ser Thr Asn Asn Thr Val Cys Ala  
 85 90 95

Pro Lys Asn His Thr Tyr Phe Ser Thr Pro Gly Val Gln His His Lys  
 100 105 110

Gln Arg Gln Gln Asn His Thr Ala His Ile Thr Val Lys Gln Gly Lys  
 115 120 125

Ser Gly Arg His Thr Leu Ala Trp Leu Ser Leu Phe Ile Phe Leu Val  
 130 135 140

Gly Ile Ile Leu Leu Ile Leu Tyr Leu Ile Ala Ala Tyr Arg Ser Glu  
 145 150 155 160

Arg Cys Gln Gln Cys Cys Ser Ile Gly Lys Ile Phe Tyr Arg Thr Leu  
 165 170 175

<210> 21  
 <211> 100  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 21

Met Cys Thr Asp Pro Arg Arg Thr Ala Gly Trp Glu Arg Leu Thr His  
 1 5 10 15

His Ala Ser Tyr His Ala Asn Tyr Gly Ala Tyr Ala Val Leu Met Ala  
 20 25 30

Thr Ser Gln Arg Lys Ser Leu Val Leu His Arg Tyr Ser Ala Val Thr  
 35 40 45

Ala Val Ala Leu Gln Leu Met Pro Val Glu Ile Val Arg Lys Leu Asp  
 50 55 60

Gln Ser Asp Trp Val Arg Gly Ala Trp Ile Val Ser Glu Thr Phe Pro  
 65 70 75 80

Thr Ser Asp Pro Lys Gly Val Trp Ser Asp Asp Asp Ser Ser Met Gly  
 85 90 95

Gly Ser Asp Asp  
 100

<210> 22  
 <211> 117  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 22

Met Arg Leu Ile Phe Gly Ala Leu Ile Ile Phe Leu Ala Tyr Val Tyr  
 1 5 10 15

His Tyr Glu Val Asn Gly Thr Glu Leu Arg Cys Arg Cys Leu His Arg  
 20 25 30

Lys Trp Pro Pro Asn Lys Ile Ile Leu Gly Asn Tyr Trp Leu His Arg  
 35 40 45

Asp Pro Arg Gly Pro Gly Cys Asp Lys Asn Glu His Leu Leu Tyr Pro  
 50 55 60

Asp Gly Arg Lys Pro Pro Gly Pro Gly Val Cys Leu Ser Pro Asp His  
 65 70 75 80

Leu Phe Ser Lys Trp Leu Asp Lys His Asn Asp Asn Arg Trp Tyr Asn  
 85 90 95

Val Asn Ile Thr Lys Ser Pro Gly Pro Arg Arg Ile Asn Ile Thr Leu  
 100 105 110

Ile Gly Val Arg Gly  
 115

<210> 23  
 <211> 159  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 23

Met Val Leu Thr Trp Leu His His Pro Val Ser Asn Ser His Ile Asn  
 1 5 10 15

Leu Leu Ser Val Arg His Leu Ser Leu Ile Ala Tyr Met Leu Leu Thr  
 20 25 30

Ile Cys Pro Leu Ala Val His Val Leu Glu Leu Glu Asp Tyr Asp Arg  
 35 40 45

Arg Cys Arg Cys Asn Asn Gln Ile Leu Leu Asn Thr Leu Pro Val Gly  
 50 55 60

Thr Glu Leu Leu Lys Pro Ile Ala Ala Ser Glu Ser Cys Asn Arg Gln  
 65 70 75 80

Glu Val Leu Ala Ile Leu Lys Asp Lys Gly Thr Lys Cys Leu Asn Pro  
 85 90 95

Asn Ala Gln Ala Val Arg Arg His Ile Asn Arg Leu Phe Phe Arg Leu  
 100 105 110

Ile Leu Asp Glu Glu Gln Arg Ile Tyr Asp Val Val Ser Thr Asn Ile  
 115 120 125

Glu Phe Gly Ala Trp Pro Val Pro Thr Ala Tyr Lys Ala Phe Leu Trp  
 130 135 140

Lys Tyr Ala Lys Arg Leu Asn Tyr His His Phe Arg Leu Arg Trp  
 145 150 155

<210> 24  
 <211> 316  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 24

Met Leu Arg Leu Leu Phe Thr Leu Val Leu Leu Ala Leu His Gly Gln  
 1 5 10 15

Ser Val Gly Ala Ser Arg Asp Tyr Val His Val Arg Leu Leu Ser Tyr

20

25

30

Arg Gly Asp Pro Leu Val Phe Lys His Thr Phe Ser Gly Val Arg Arg  
35 40 45

Pro Phe Thr Glu Leu Gly Trp Ala Ala Cys Arg Asp Trp Asp Ser Met  
50 55 60

His Cys Thr Pro Phe Trp Ser Thr Asp Leu Glu Gln Met Thr Asp Ser  
65 70 75 80

Val Arg Arg Tyr Ser Thr Val Ser Pro Gly Lys Glu Val Thr Leu Gln  
85 90 95

Leu His Gly Asn Gln Thr Val Gln Pro Ser Phe Leu Ser Phe Thr Cys  
100 105 110

Arg Leu Gln Leu Glu Pro Val Val Glu Asn Val Gly Leu Tyr Val Ala  
115 120 125

Tyr Val Val Asn Asp Gly Glu Arg Pro Gln Gln Phe Phe Thr Pro Gln  
130 135 140

Val Asp Val Val Arg Phe Ala Leu Tyr Leu Glu Thr Leu Ser Arg Ile  
145 150 155 160

Val Glu Pro Leu Glu Ser Gly Arg Leu Ala Val Glu Phe Asp Thr Pro  
165 170 175

Asp Leu Ala Leu Ala Pro Asp Leu Val Ser Ser Leu Phe Val Ala Gly  
180 185 190

His Gly Glu Thr Asp Phe Tyr Met Asn Trp Thr Leu Arg Arg Ser Gln  
195 200 205

Thr His Tyr Leu Glu Glu Met Ala Leu Gln Val Glu Ile Leu Lys Pro  
210 215 220

Arg Gly Val Arg His Arg Ala Ile Ile His His Pro Lys Leu Gln Pro  
225 230 235 240

Gly Val Gly Leu Trp Ile Asp Phe Cys Val Tyr Arg Tyr Asn Ala Arg  
245 250 255

Leu Thr Arg Gly Tyr Val Arg Tyr Thr Leu Ser Pro Lys Ala Arg Leu  
260 265 270

Pro Ala Lys Ala Glu Gly Trp Leu Val Ser Leu Asp Arg Phe Ile Val  
 275 280 285

Gln Tyr Leu Asn Thr Leu Leu Ile Thr Met Met Ala Ala Ile Trp Ala  
 290 295 300

Arg Val Leu Ile Thr Tyr Leu Val Ser Arg Arg Arg  
 305 310 315

<210> 25  
 <211> 122  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 25

Met Val Asp Gln Cys Cys Tyr Arg His Leu His Arg Ser Leu Ser Gly  
 1 5 10 15

Gly Pro Asp Val Leu Tyr Ala Ala Ala Gly Thr Gln Arg Glu Gln Gln  
 20 25 30

Arg Leu Asp Lys Ser Leu Ala Ala Thr Ala Pro Ser Ala Val Ala Gly  
 35 40 45

Pro Pro Ala Asp Arg Asp Val Val Asp His Arg Thr Glu Thr His Ala  
 50 55 60

Tyr Glu Thr Pro Arg Tyr Ala Thr Arg Cys Leu Thr Arg Tyr Thr Thr  
 65 70 75 80

Pro Val Arg Ser Ala Val Arg Arg Thr Thr Cys Gly Lys Arg Val Ala  
 85 90 95

Ser Gln Ser Pro Pro Arg Ser Cys Leu Val Ala Pro Gln Ser Ser Pro  
 100 105 110

Ala His Pro Pro Arg His Pro Glu Gly Gly  
 115 120

<210> 26  
 <211> 642  
 <212> PRT  
 <213> Human cytomegalovirus

<400> 26

Met Gln Leu Cys Ser His Ser Ile Ser Ser Gln Arg His Val Ala Ser

1	5	10	15
Ser Met His Cys Arg Ser Arg His Gln Arg Thr Pro Pro Ser Ala Thr	20	25	30
Thr His Gly Pro Cys Ala Pro Thr Ser Arg Ile Leu Arg Arg Leu Leu	35	40	45
Thr Thr Arg Arg Phe Leu Pro Arg Thr Pro Ser Pro Ser Asn Thr Val	50	55	60
Cys Cys Ile Arg Arg Arg Leu His Glu Arg Thr Ile Arg His Ser Met	65	70	75
Arg Cys Arg Arg Arg Asp Met Ala Ser Ser Ala Ser Thr Pro Val Ser	85	90	95
His Thr Gln Pro Leu Ala Ala Asn His Arg Arg Ser Arg Ile Thr Tyr	100	105	110
Ala Thr Thr Asp Pro Thr Asn Ser Pro Thr Ala Ser Pro Ala Lys Ser	115	120	125
Asp Lys Leu Glu Ala Asp Ala Asp Pro Ala Leu His Arg Arg Pro Ala	130	135	140
Ser Leu Leu Arg His Leu Phe Gln Pro Cys His Ala Gln Arg Gly Thr	145	150	155
Ser Asn Arg Ala Thr Ser Gln Arg Ala Ser Leu Asn Ala Val His His	165	170	175
Lys Leu Cys Gly Ala Met Ile Ser Ser Ser Cys Ser Thr Thr Cys Thr	180	185	190
Pro Leu Ile Met Asp Leu Pro Ser Leu Ser Val Glu Leu Ser Ala Gly	195	200	205
His Lys Lys Lys Glu Thr Pro Thr Glu Gly Gly Trp Gly Gly Glu Glu	210	215	220
Gly Glu Asp Asp Val Leu Ala Thr Ile Arg Asn Thr Leu Ser Ala Pro	225	230	235
Thr Ser Pro Ala Ala Ala Thr Thr His Arg Leu Ser Phe Pro Gly Glu	245	250	255

Ser Thr Phe Cys Leu Thr Ala Val Ser Glu Cys Ser Gln Arg Arg Thr  
 260 265 270

Ser Thr Ala Ala Leu Thr Pro Pro Pro Pro Ala Val Ala Ala Ala Phe  
 275 280 285

Ser Phe Ser Ser Thr Val Ser Glu Thr Gly Thr Phe Pro Gln Ser Thr  
 290 295 300

Thr Gly Arg Thr Arg Val Asp Asp Thr Ala Val Val Thr Ala Gly Asp  
 305 310 315 320

Pro Arg Ser Pro Val Thr His Val Thr Leu Leu Gln Ile Phe Arg Leu  
 325 330 335

Arg Ser Ser Leu Leu Thr Ser Arg Ser Gly Gly Ala Leu Arg Gly Gly  
 340 345 350

Glu His Glu Ala Ile Pro Lys Val Ala Ser Leu Phe Trp Thr Leu Leu  
 355 360 365

Lys Ala Thr Gln Ile Val Glu Met Thr His Lys Thr Pro Ser Ala Asp  
 370 375 380

Ser His Arg Asn Pro Gln Lys Tyr Thr Asp Arg Pro Gln Arg Leu Leu  
 385 390 395 400

Leu Thr Ala Leu Ala Ile Trp Gln Arg Thr Tyr Asn Asp Thr Arg Ala  
 405 410 415

Ala His Ala Pro Gln Val Arg Leu Leu Gly Asp Ile Leu Thr Tyr Arg  
 420 425 430

Arg Pro Gln Thr Ala Thr Ala Ser Thr Lys Ala His Thr Gln Gln Gln  
 435 440 445

Pro Glu Glu Pro Lys Gly Gln Gln Ile Trp Thr Gln Thr Ala Gly Gln  
 450 455 460

Ala Ala Pro His Gly Asp Glu Pro His Ser Asp Gly Glu Leu Arg Arg  
 465 470 475 480

Glu Ser His Ser Ala Pro Pro Thr Ser Arg Thr Leu Pro Asp Thr Ile  
 485 490 495



Leu Ala Val Lys Arg Arg Ser Val Ala Gln Arg Ser His Val Arg Leu  
500 505 510

Asp Ala Lys Pro Gly Leu Asn Glu Arg Asp Gly Phe Arg Gln Arg Leu  
515 520 525

Leu Leu Pro Leu Ser Gly Tyr Phe Arg Ala Asn Glu Leu Arg Asn Gln  
530 535 540

Gln Phe Met Gly Tyr Gly Thr Lys Asn Gly Leu Lys Asn Thr Trp Leu  
545 550 555 560

Thr Arg Pro Leu Gly Val Ala Gly Gly Val Arg Glu Thr Ile Gly Glu  
565 570 575

Arg Gln Asp Arg Asn Val Ala Asp Ser Ala Thr Gln Arg Val Phe His  
580 585 590

Thr Leu Tyr Ala Ala Leu Gln Thr Val Arg Val Trp Tyr Thr Ala Leu  
595 600 605

Gly Thr Ala Trp Arg Thr Ser Gly Ser Arg Thr Arg Glu Ser Leu Phe  
610 615 620

Asp Gly Pro Arg Arg Arg Asp Arg Gln Ala Ala Arg Leu Arg Arg Leu  
625 630 635 640

Glu Leu

<210> 27  
<211> 336  
<212> PRT  
<213> Human cytomegalovirus

<220>  
<221> MISC\_FEATURE  
<222> (47)..(47)  
<223> X is unknown (one of the naturally occurring amino acids)

<220>  
<221> MISC\_FEATURE  
<222> (49)..(49)  
<223> X is unknown (one of the naturally occurring amino acids)

<220>  
<221> MISC\_FEATURE  
<222> (115)..(115)  
<223> X is unknown (one of the naturally occurring amino acids)

<400> 27

Met Val Phe Val Ser Gly Thr Ala Leu Gly Thr Gly Phe His Arg Ala  
1 5 10 15

Glu Gly Ser Phe Cys Gly Cys Glu Gly Arg Ser Phe Phe Arg Thr Leu  
20 25 30

Gly Thr Gly Leu Gly Asp Gly Gly Cys Ala Gly Arg Arg Trp Xaa Arg  
35 40 45

Xaa Val Ala Gly Thr Gly Ile Thr Leu Gly Thr Gly Thr Arg Gly Pro  
50 55 60

Gly Leu Arg Asp Gly Gly Asp Gly Gly Val Cys Gly Glu Asp Gly Gly  
65 70 75 80

Leu Leu Arg Arg Gly Arg Gly Leu Ala Gly Pro Ala Val Ala Gly Val  
85 90 95

Cys Gly Asp Gly Gly Leu Leu Gln Arg Arg Gly Leu Arg Gly Gln Glu  
100 105 110

Cys Ala Xaa Pro Gly Gly Phe Ala Gly Gly His Gly Thr Gly Gly Gly  
115 120 125

Gly Asp Ser Thr Asn His Thr His Thr Gln Leu Thr Ser Ala Val Ala  
130 135 140

Leu Ser Glu Pro Pro Leu Phe Phe Ile Asn Val Leu Ile Pro Pro Ala  
145 150 155 160

Tyr Thr Arg Asn Ala Ala Cys Ser Tyr Ala His Thr Leu Ser Leu His  
165 170 175

Ser Asp Met Leu Leu Arg Leu Cys Thr Ala Ala Ala Asp Thr Ser Gly  
180 185 190

His Arg His Leu Pro Pro His Met Ala His Val Leu Arg Arg Pro Ala  
195 200 205

Ser Tyr Val Val Cys Ser Gln His Gly Ala Phe Phe Pro Ala Arg His  
210 215 220

Leu His Arg Thr Pro Ser Ala Ala Phe Ala Val Ala Ser Thr Arg Glu  
225 230 235 240

Gln Tyr Ala Thr Ala Cys Ala Val Ala Ala Ala Thr Trp Pro Pro Arg  
 245 250 255

Leu Pro His Leu Phe Arg Thr Pro Asn Leu Trp Leu Pro Thr Thr Asp  
 260 265 270

Val Gln Gly Ser Arg Thr Arg Arg Pro Ile Pro Pro Ile Leu Gln Arg  
 275 280 285

Pro Arg Pro Pro Ser Gln Thr Ser Trp Lys Pro Thr Gln Thr Gln His  
 290 295 300

Ser Ile Asp Ala Arg Pro Arg Cys Cys Ala Thr Ser Ser Ser Pro Ala  
 305 310 315 320

Thr Pro Asn Ala Ala Leu Pro Thr Glu Pro His Pro Arg Gly Leu Pro  
 325 330 335

<210> 28  
 <211> 11950  
 <212> DNA  
 <213> Human herpesvirus 5 (AD169)

<400> 28  
 cctcgccatg aggatcgcca caggcgcgtc gagggggcag gaacaccctt gcggattgac 60  
 attcttggtg gtgtttcggt gttgtcggta gttgttgttg acgatgagga taaataaaaa 120  
 tgacctgtt tttgttctgt tttctcttgt tgggaatcgt cgactttgaa ttcttcgagt 180  
 tatcggaag ctgaggtacc caaatgtctg tagctttttt ctttttacc tcttgtttat 240  
 catctgcgat tcgtggtagg taggagaggg aaatgataat ccgagattaa ggaaaggaga 300  
 agataaaaaa taataaaaca gaagccgacc ggccgcccac ccgttcccca 360  
 ggaccagcct acgaggaacg gataacgcgg tggcgacggc agcgggtggtg gcgctggggg 420  
 tggcggcagt ggtactgctg atggtagtcg ggacggagga gaggcgatgc atacatacac 480  
 gcgtgcatgc tgcattgggt gatggtacgg ccgggagacg cggaagagaa actcacataa 540  
 aaaggtgaca aaaagagcgg ttgaaaaaag aaaacaagat tcgaccagac agaagagaag 600  
 gaccggggct tggcgaccct tccacgactg ctgttgtcat ctcggtcctt ccgtcttctc 660  
 ccggccacgg gcggctaagt caccgccgtt ctccccatcc gtccgagcgc cgaccgacca 720  
 gccggccgat tcgcccgcgg gggcttcttg agaacgccgg ggcagcagcg atctggggaa 780  
 gctgctaaac ccctgcgttt ttatatggtg gctctgccga gcgcgggctg acgcgttggg 840

taagcggaaa gacgtgtgtg acgaaaaggg gtcccatggg atttcacgtg acgatgagga	900
gatacgggttt ggagcacata cggtttagaa aaagggagtt gtcgtgacaa gggctgaggg	960
acctctgtct ccatgtgtgt ataaaaagca aggcacgttc ataatgtaaa aaagaacacg	1020
ttgtaaacia gctattgtgt tatcattcgg ctgactatgc ttcattcga ctgattttct	1080
tttcctaacg gcgtaactta aagtgattaa cgtatgatat ttgttccca gagttatact	1140
atagtcatca tcctaaaatt cagatataaa tgaacacatg tcgtatggga ttattaagaa	1200
accgaaactc tccacagttc accatcttct tcgtcattca accgatgacc cactccgtac	1260
aacgaatcag tctgtctcgt catattgcaa agcacaagcg acgtatgcga acaacttgaa	1320
acacaggctg ttgtattgac gaccgttgta ccattattag tcaccaccgt tatcccatgt	1380
ttccaccccg atggaaaacc gtcttctatc atcaactgtg gtaagatttc gaccctgcga	1440
ggtattcagt ttctcatat ccataacctg gattttatca ttaaacccca atattaaaca	1500
cttttttagt accccccacc caccaaaaaa tgtgactgga ccggttcta gcagctctgg	1560
gagccatgtt cagggtgaac cacagctaca gcgaaaccga gtccagtac cggttaaccac	1620
gtccagcccc tgcgtatgta ccagtcgaag cagctccgt cattgttcta cacaggaaat	1680
ctaactaggt caacgcaatt ttattccacc gttacgcaga atactaaca aaaaacacac	1740
aaatttaacg aattacacgt agtttattac atgaaaactg taagaacacc aattcactaa	1800
gcgatacaac atttagctga ctccaagtg ccacacatca ccaactgtatt catccatgtt	1860
ttcaccgaac caacgagaca gatcgaagaa gccagaatct cccgacttta aattacataa	1920
atccaacgta ttatgaccac agctcgacac acaaatagtt gcgttactat tcacagtagc	1980
attacctata cccgtaacgt tgcacaacca ctgatcacca ttgttaccaa aaacgggttt	2040
ccacttagtt gtcaacggat ctttcctatg cgtaatggta aaattactac cagtcgtcgc	2100
ttttagctca ttacgagtat tatccgcata cacatatatc aacgtcatag ctaggcacgc	2160
tataagtacc cccccccac aatggaatgt tgccaaaccg gttctttccc gttatagcca	2220
tagcgttccc aggcaaaagc aaacgccaaa cctaattgcag tgaaaagcgc ttgcagccag	2280
aaccagctta tgtaccagcc acaatcacat ccggttattg tttccacagg aaatcctacc	2340
aggcaaagcc ccgcttggtt tgttcctatc ttgttttagca attcgtaaac tgtcagccta	2400
gcgacgtccg tttagatcaa aagtcacgta tatagcgacg ctgtttccat ccgtttcccc	2460
gtcccgccgt ttccgaacaa cccaccggg ttccagacaac cgaccaccaa cagaaatata	2520
cacacagacc actgggagtt cagttaaaga tttcatcagg tttatttttg ctgctgctag	2580
tcttttgctt cttagaaaaa aaatacccat atagagaaat aatgatagtt tgacaacaca	2640
tatggcaggg atttcttctt catcaataag atatgcaatt ccccaggga gagactttca	2700

acaattgaat ttacaaaaac aaaattacat caggagaaaag agaggataca ttaataaata	2760
tattatatct ggtgtatata ctgaatgctg ctgggtcata aggtaacgat gctacttttt	2820
ttaattccaa gatgggtttt ctttgttagt cttttgttga cttgctgggt cctaaaagtt	2880
cgcaaaaacg attgtgtgaa gattttatga cgttgggtga ctagttcatg agattctgct	2940
gtacgtgtga tggttattcg ctgggtcggt ctaagatgag tatcgtagt tgtctgcgat	3000
ggtcgtctct tactggcatt ctctcggtg cctcttgctt tcatgattga aaaggaaaaa	3060
aggactccga gggcgcggtc atcttttact tttcggtttt ctcggtggcg ggtcagaggt	3120
agtcagatca tgagactgtc gtggtcgatg aaactgtgtc tgctcaagt acgtccattt	3180
cttgtagcga gaaaaaagtc atcgggataa ataaggctat acaaggcggt gtcaagcgtg	3240
cggctctaaa caaattaagc gatacaaaat tacagtaata cgaataataa attaccccc	3300
tccccctgtg gtccccgag acgagagcca cccatcgtgt actctgcac caccacgac	3360
cacagagga gacgggacga agagacgacg cacagcgcca tctcctcctg gaggccggcg	3420
acgttaactg ctacagctgc ggcggcgaag acagctgcga tttgtcggcc gacatgccga	3480
tggatatggc ggcggcggca atggccgcg cagcggggag gagaggagag agaagaggag	3540
cggggcgctc gaaggcgagg atggcatggt ctgcgggag cgccgggctt ttatggaaca	3600
ctcgcgtccg gttgggtatc acccacagga agatgagtca caacttcaa accatcttga	3660
gacccgagta acggtttaca ggtcgcacgc cagtcagcta aaaacagcgg acagtccac	3720
gctgtttctg ttgtggctct ctccagtttc ctcatcacg tcccggctc cgctcgtatc	3780
ggaagaatac caccgctct catgcggcag tcgatcggcc tcgacgaac agacgcggcg	3840
acgcctctcc acggccgact ggttgtgtg gtgaaagaag agcaccagca atcccaggag	3900
gagcaacaag cctcacatg tccaggaggt cggggagagg gcctgtcga gatggccgtg	3960
aggcatcacg tacggcagct gaggagaaac ggagaagaaa ggaaaattac cgtcaggggc	4020
cggggttctt attagagaaa cagcacgtag gtcaggatcc agatgcta at ggcaatcatg	4080
atgacgatga tcatgcaggc caagacgcgg cgcaccaatg ccgaatccaa tagccgccgt	4140
gcctccggtt ggtggccggc ggcatctaga gacatgattt gggggggacc ggcggcgcaa	4200
aaagacagg agatggacag tgtcacggtg ttttgttata attaggacat ggggaccgga	4260
agccgagaca gagtactaca ggggtgtgaa gggtaacgtg agggagatca tgtcatgggc	4320
gggctgaaga ccgtgcgggg aggattgacg tgtgcgggtc ttgtggaaca cgggtgttta	4380
atatgtatcc gcgtgtaatg cacgcgggtg gctttctggc actcagcttg gtaagctatg	4440
tggccgtctg cgccgaaacc aaagtcgcca ccaactgtct cgtgaaatca gaagatacc	4500

atttgacgtg	caagtgcagt	ccgaataaca	catcatctaa	taccggcaat	ggcagcaagt	4560
gccacgcgat	gtgcaaatgc	cggatcacag	aaccattac	catgctaggc	gcatactcg	4620
cctggggcgc	gggctcgttc	gtggctacgc	tgatagtcct	gctggtggtc	ttctttgtaa	4680
tttacgcgcg	cgaggaggag	aaaaacaaca	cgggcaccga	ggtagatcaa	tgtctggcct	4740
atcggagcct	gacacgcaaa	aagctggaac	aacacgcggc	taaaaagcag	aacatctacg	4800
aacggattcc	ataccgaccc	tccagacaga	aagataactc	ccggttgatc	gaaccgacgg	4860
gcacagacga	cgaagaggac	gaggacgaca	acgtctgata	aggaaggcga	gaacgtgttt	4920
tgcaccatgc	agacctacag	cacccccctc	acgttgtca	tagtcacgtc	gctgtttttg	4980
ttcacaactc	aggaagtgc	atcgaacgcc	gtcgaaccaa	ccaaaaaacc	cctaaagctc	5040
gccaaactacc	gtgccacctg	cgaggaccgt	acacgcacgc	tggttaccag	gcttaacact	5100
agccatcaca	gcgtagtctg	gcagcgttat	gatattctaca	gcagatacat	gcgtcgtatg	5160
ccgccacttt	gtatcattac	agacgcctat	aaagaaacca	cgcgtcaggg	cggtgcggcg	5220
ttcgcgtgca	cgcgccaaaa	tctgacgctg	tacaatctca	cggttaaaga	tacgggagtc	5280
tacctctgc	aggatcagta	taccggcgat	gtcgaaggctt	tctacctcat	catccacca	5340
cgtagcttct	gccgagcctt	ggaaacgcgt	cgatgctttt	atccgggacc	aggagagatt	5400
gtggttacgg	attcccaaga	ggcagaccgg	gcaattatct	cggatttaaa	acgccagtgg	5460
tcgggcctct	cactccattg	cgcctggggt	tcgggaatga	tgatctttgt	tggcgcgctg	5520
gtcatctgct	tcctgcgac	gcaacgaatc	ggggaacagg	acgtgaaca	tctgcggacg	5580
gacctagata	cggaaacctt	gttgttgacg	gtggacgggg	atttacagta	aaagatgcgt	5640
gtcgctgcc	gaagacctca	ccatctcacg	tacaggcata	cggcgtatac	aatcataata	5700
ttctatattc	tgcatagagt	tacatgcaac	agtactacta	ccaatactgc	atccatcaca	5760
tcaccaaca	ctgcttctac	cacctttgtg	accagcgat	tttctactcc	gaataacaac	5820
acatcaacga	cgccacacac	atctgtcacc	tcacaagcgt	caaccattgg	caacatcacc	5880
aacgttacct	cgcacttgag	tactttcaca	accgtatatt	ctacattcaa	tacatcatat	5940
gctaatatat	ccaatacggc	tgccactaca	gaattgattt	caacaaatac	caacactata	6000
ttatctttta	ccaacgtaac	agcaaacgct	acatcatctt	ataacacaac	aatcacgta	6060
actatcacgt	cagatgaaac	ttcgcacaac	gtatccacta	atactgcact	tataagcacg	6120
ccatggctta	caaattgcag	cgccacaacg	tacaccacgt	acaaccgtac	taactcttcc	6180
aacgcttgtc	acacagagac	aacaatcata	cgtttcaaag	aaactaatac	aacaggaata	6240
gaagggagta	atgtcaccat	aaaaggtaat	tctacgtggg	attgtctttc	agtcgcctgg	6300
atagacatt	acaatcgatc	cacacacgga	catcatctag	gtcatcgtaa	gaacgcacat	6360

acccaatctt ggtattggtt acgcatcctt acctctcata ctgtatgtca ttctcaacat	6420
gaaagacctt cactgtacca tgacttatgt cgttcgtgca acaacacaga actacatctg	6480
tacgatctaa atatcaccaa ttccggcagg tacagcagac gttgttttaa agaaaattac	6540
ttcacaggac atcacgaaga tgaaaatttc tacctattag taacaccaaa aaatcatact	6600
gaagctatta atgctacttt cgtttgccct agatacaaca ccgatatcga aaatgaagat	6660
agagagaaag gaagtcaaca tactaacaat acacatcacc acaaacgtaa tctctatcat	6720
agctcgcaaa gaagccgcac cgatatggacc atcgtgttgg tttgtatggc ctgcatagtt	6780
ctgttttttg cacgacgagc ctttaacaaa aagtaccata tgttgcaaga caccgtcagt	6840
gaatcagaat tcattgttcg atatcacaca gaacatgaag attgagctac gtttcggggc	6900
agacatctta tgaagctgaa caataaacta aaacattctg taaggctcag cgttcaaagg	6960
aatattaatg cccattgagc gagaactaat attgcaatgg actggcgatt tacggttatg	7020
tggacgatac taatatccgc gttatcagaa agctgcaatc aaacctgttc ctgtcaatgt	7080
ccctgtagta ctaccgttaa ctattccact agtactgaga cagccacatc aacatacagt	7140
acaacagtta tcagcaataa aagcacttca gaatctataa attgctctac tgcaactgca	7200
ccagcaacca ccgtttctac aaaaccgtcg aaaacaacca cacagatatc cacaacgaca	7260
aatacaaacg ttgagactac cacatgtacc aacaccacca cgaccgttac ttgtgatggg	7320
ttcaattata cagtccataa aagatgcgac cgcagttacg aggtaatcaa cgtaacagga	7380
tacgttggtg gcaacataac tctaaaaaat gcaatcagac tgagaaatgg cacaatgtag	7440
actggattca ttatgagtac cccacgcata aaatgtgcga attaggcaac tatcaccaaa	7500
caacaccacg gcacgacata tgttttgact gcaacgacac ctccctaact atctacaact	7560
taaccacaag aaacgctgga aaatatacca ggcatcaccg tgataacggg caagaagaaa	7620
attactacgt aacgggtgta attggagaca caacgttatc cactcttggc acatgccctg	7680
taagatataa agaatctagg aacactgaaa acaccattgg aagtaacatc ataaaaacca	7740
ttgagaaagc taacattccc ctgggaattc atgctgtatg ggcaggcgta gtggtatcag	7800
tggcgcttat agcgttgtac atgggtagcc atcgcatcc caaaaaaccg cattacacca	7860
aacttcccaa atatgatcca gatgaatttt ggactaaggc ttaacatgca catcaataaa	7920
ctttttttta ccaataacat gtctctgttt ttttttgta acaacctatg atataaagcg	7980
gtatatccaa tcattactaa acaaaaaaac atgggcatgc aatgcaacac taaattgtta	8040
ttgccagtcg cactaatacc ggttgtaatc atcctaattg gtactctagt gccatactt	8100
ttacatgaac aaaaaaaggc gttttactgg cgactttttc tgcaaagtca acatgtagaa	8160

gcacccatta	cagtaacgca	gggagacaca	gtctacctag	atgctagcaa	taatccctgt	8220
aattattcca	gcttttggta	ccacggtaat	tgcgaacttt	gtggatggaa	cgatatctta	8280
cgcaatgtta	cacattacta	cacaaacaca	tcgtgttccc	cgcaattcat	gtgcataaac	8340
gaaactaaag	gtctgcagtt	atataatgta	acattaaacg	attcaggtgc	ttatactgaa	8400
cacgtttacg	aatgtgatct	ttcatgtaac	attactactt	ataacgaata	tgaaatactc	8460
aattacttcg	ataactgtaa	ctacaccata	aatagcacca	agcatattat	caccgtgggtg	8520
tcttcacgtc	attctaaaca	aacaaattcc	cacgtatcca	ctcacgctgg	ttgggcagcc	8580
gccgtgggtga	cggttaattat	gatctacgtt	ttgatccact	ttaacgttcc	ggcaactctg	8640
agacacaaac	tacgaactag	aaacaacgta	aatcgcatag	cgtgattaca	aagtatcgac	8700
actaatttat	ccaagataaa	atttgattac	tccgtgcggt	tctcaaaaac	tgtaagggtcc	8760
cgcttttcta	ctccatcatg	aaggatcgca	atagaatact	gctatgtatc	atctttattt	8820
gcatcatgtg	cctcatttgt	atttacttta	aacgtcgttg	tgttcttact	ccgtctccag	8880
acaaagcggg	tctgcgagtg	gaatttccct	cgttaccccc	gtgtatcggc	atacaatgtg	8940
ctgcatgaga	acacgcgtga	cacatagcgt	accctggac	ggtacagttt	atgataacgt	9000
cattcagggg	aagtatacat	tactatcgac	gtgttatcac	agaacacaca	gattttctgc	9060
gtgttttata	aaagagcgtc	tcgaagcagc	ttgagccaca	ctacgggtcca	gatgacgagc	9120
gtaatcaaaa	atatgccgcg	cagtagtcga	aagccgtact	gagcgtgcga	ggcgggtagg	9180
gtgccgaacg	acggatatgc	gtcgttgtca	tcttcgacta	taaggatcgc	gaccgagtct	9240
tcggccatgg	taaacgtcac	cctgtgtggc	tggtatgtag	cgtatccggt	ttggaattgt	9300
tctgctccag	ctcgggggat	agtgaggaat	tctcaaggga	tacgggaccc	aatgactgga	9360
taagagaagg	gtttttcccc	gtaagatgat	cctcgtatca	catgaggtct	ggatatgtat	9420
aatgaagag	tgaaataggc	acagggaatc	agatgccagc	ctcgtgatgc	agccgctggt	9480
tctctcggcg	aagaaattgt	cgtctctgtt	ggcttgcaaa	tacatcccac	cttaagcgat	9540
gagtcataaa	agcaccgttg	tccgggtacg	gtgaaagtga	ctcggattgt	agcacgtccc	9600
ttttttttgt	ttttgtatcg	cttatcgcca	ctgacagtgc	aatattttga	tcgtgaggct	9660
gagtatgggt	atgatgctta	gaacgtggag	attattacca	atggtactac	ttgccgcgta	9720
ctgttattgt	gtttttggga	cttgttcaat	cggcacgacg	actgctcccg	tggaatggaa	9780
gtctcccgac	cgtcagattc	ctaagaatat	tacttgcgct	aactactcag	ggaccatcaa	9840
cggcaacgtt	acatttcgag	gtcttcagaa	caaaacggaa	gactttttgc	actggttggt	9900
agggtggggt	cataagtcca	tctgttcggt	cttcccgaaa	ctccagggca	actataacga	9960
acaacattac	agatatgaag	tagcgaacct	gacgtataac	tgcacctata	accgcttgac	10020



gttgctaaat ctgacgacgg aaaacagcgg aaagtactat tttaaaaggg aagatgcgaa 10080  
 ttccaccttt tattactctt gttacaacct gaccgtgtcc taaagaacgc acgtgaagtt 10140  
 ccacagagcc gcgtggctgt agctattgtg ttacggtgc ttttgaaatg ttaagcgtcc 10200  
 ctacggcgct aacatgtttc taggctactc tgactgtgta gatcccgcc ttgctgtgta 10260  
 tcgtgtatct agatcacgct taaagctcgt gttgtctttt gtgtggttgg tcggtttgcg 10320  
 tctccatgat tgtgccgct tcgagtcctg ctgttacgac atcaccgagg cggagagtaa 10380  
 caaggctata tcaagggaca aagcagcatt cacctccagc gtgagcacc gtacaccgtc 10440  
 cctggcgatc gcgcctctc ctgatcgatc gatgctgttgc tcgcgggagg aagaactcgt 10500  
 tccgtggagt cgtctcatca tactaagca gttctacgga ggctgattt tccacaccac 10560  
 ctgggtcacc ggcttcgtct tactaggact ttgacgctt ttcgccagcc tgtttcgcgt 10620  
 accgcaatcc atctgtcgtt tctgcataga ccgtctccgg gacatcgccc gtcctctgaa 10680  
 ataccgctat caacgtctcg tcgctaccgt gtagctagtt agccagctgt gtatagtttg 10740  
 ttgtgttttg cttttgcata tttgttttca gtcagagagt ctgaaacggg gtgggaggga 10800  
 cttttacggg taatgcatgc taagatgaac ggggtgggctg ggggtgcgctt ggtaactcac 10860  
 tgtttgaata cgcgctcacg cacatatgta gcactcaaca tgttagcttt tgcccgcacg 10920  
 ccccggggcg tgccgagctg cttttttaat aaagtctggg tttccagata cgcgctgggt 10980  
 ctgattttga tgggttgc ctctgaaagc tctacgagct gggccgtgac atccaatcga 11040  
 ctgcctaact gtagcacgat aactacaaca gcgggtcaag acgctgaatt gcacgggtccg 11100  
 gcaccgttaa gctgtaatgt gaccagtggt ggacgttacg agaatggaag cacaccgta 11160  
 ttatggtgca ctttatggg atcacgcacg cgagtctcat taggacaccg tgtagcgttt 11220  
 ggctgttctt ggaaaacatt tttatttat aacgtttctg aaagtagtggt tggcacttat 11280  
 tatcaaaaag gttacaactg caccgacaaa catataacac tatcttgttt caacctaacg 11340  
 gtggttcctc gagcgggtca aagcacaacc accgtaatga caccacggt ggttacaac 11400  
 tccacattca gtgtgtcact tgttgcgtcg agactgacga caaattccag cgcgtttaga 11460  
 cacgctagtt atcaacggca acagcgtgtc ggaaacggga cgttatccaa gaacataact 11520  
 aacttgcat tcacctacg cagctggggc gtcgcgatgc tgctgttcgc cgccgtgatg 11580  
 gtgctcgttg atttggttt gcctcaatcg gcttggcgac gctggcgaag ccacgtggac 11640  
 gatgaagaac gtggtttgtt aatgtaggaa ataaaaggca ctgtttgagc atgactgttt 11700  
 ccaaaccgta acgtggtaaa taaatcatgg cttccgacgt gagctcccat cttctaacgg 11760  
 ttacacaatc ccgttggaaca atacatcata tgtacaataa actgttgatt ttggcgttgt 11820

ttacccccgt gattctggaa tccatcatct acgtgtctgg gccacagga gggaacgtta 11880  
 ccctgtatc caacttcaact tcaaacaatca gcgcacgggtg gtttcgctgg gacggcaacg 11940  
 atagtcattc 11950

<210> 29  
 <211> 14078  
 <212> DNA  
 <213> Human cytomegalovirus

<400> 29  
 cggctctggca gcgactggaa cccggacgcg tagccggcgg cgccgcgcgt catcaaaaag 60  
 tgcaggaact gttgcagcgc ttgggtcaga cgctaggcga cctagaactg caggaaacgt 120  
 tggcgacgga atactttgcg ctgttacacg gaatccagac cttcagctac gggctggact 180  
 ttcggctcga gttggaaaag atccgcgatc tgcggactcg ttttgcggaa ctggccaagc 240  
 gacgcggcac gcgtctctcc aacgagggag tctgcccga ccccggaac ccgcaggcga 300  
 cgacttcaact gggcgccctt acacgcgggt tgaacgcgct ggaacgacac gtccagctgg 360  
 gtcaccagta tctgtcaac aagctcaacg gctcatcgct agtctatagg ctggaagaca 420  
 ttcctagcgt gcttccggca acacacgaga ccgacccgc gctgataatg cgcgaccgcc 480  
 tgcgtgcct atgcttcgcg cgtcaccacg acaccttct tgaagtggta gacgtcttcg 540  
 gcatgcggca aatcgtcacg caggccggcg aaccattca cctggtcacc gattatggca 600  
 acgtagcctt taagtacttg gcgctgcgag acgatggtcg gccctggca tggcggcgcc 660  
 gctgtagcgg cgaggactc aagaacgtcg tcaccacag ttataaagcc atcacggtag 720  
 ccgtggccgt ctgtcagaca ttgcgcactt tctggccaca gatctcgag tacgacctac 780  
 gacctacct cacgcagcat cagagccaca cgcacccgc ggagactcac acgttgcata 840  
 accttaagct cttttgttat ctggtgagca ccgcctggca ccagcgcac gacacgcagc 900  
 aggagctgac ggccgccgat cgcgtaggca gcggcgaggg tggtagcgt ggggaacaga 960  
 gaccgggccc cggtaccgtg ctgcgcctga gtctgcaaga gttttgtgta ctcatagcgg 1020  
 ctctgtaccc cgagtacatc tacaccgtcc tcaaataccc ggtgcagatg tcaactacct 1080  
 ccctcacagc tcacctacat caggatgtga tacacgcggt agtcaataac acacacaaaa 1140  
 tgccccccga ccacctcccc gaacagggtca aggccttctg tatcaccccc acccaatggc 1200  
 ccgccatgca gctcaataaa ctgttttggg aaaataaact ggtacagcaa ctgtgccagg 1260  
 taggcccga aaaaagcaca ccgcccttag gcaagctatg gctctacgc atggccacgc 1320  
 tggctcttcc acaagacatg ctgcagtgtc tgtggctaga actgaaaccc cagtacgccg 1380  
 agacatacgc ctcgggtgtcc gaattggtac agacgttgtt tcagatttcc acgcaacaat 1440

gcgaaatggt gaccgagggg tacacgcaac cgcagctccc caccggagag ccggtgcttc	1500
agatgatccg cgtgccacgt caggacacaa ccaccacaga cacaacacg accacggagc	1560
cgggactttt agatgttttt attcaaacag aaaccgccct agactacgcg ctgggctcct	1620
ggcttttcgg catacccggtg tgtctcggcg tgcattgtgc cgacctgctg aaaggccaac	1680
gtatactagt agcgcgccac ctcgaataca cgtcgcgaga ccgcgacttc ctccgcatcc	1740
aacgctcccg ggatctcaat ctcagtcaac tgctccagga cacgtggacc gaaacgccgc	1800
tggagcactg ctggctacaa gcccaaataca gacggctacg cgattacctg cgtttcccca	1860
cccgtttaga gtttattccc ctagtcattt acaacgcaca ggaccacacc gtcgtacgcg	1920
tgctgcgacc gccctccacg ttccaacagg accacagtcg gctgggtgtg gacgaggcct	1980
tccccacctt cccgctgtat gaccaagatg ataactcatc cgcggacaac atcgtgcgt	2040
ctggcgccgc tccaacaccg ccggtacctt tcaaccgcgt gccagtcaat attcagtttc	2100
tgcgtagaaa cccgccaccc atcgcgcgag ttcagcagcc gccgcgccga catcgtcatc	2160
gagcggccgc ggccgcagac gacgacggac agatagatca cgtacaagac gatacatcaa	2220
ggacagccga ctctgcatta gtctctaccg cctttggcgg gtccgtcttt caagaaaacc	2280
gattgggaga aacaccacta tgccgagatg aacttggtggc cgtggcgccc ggcgccgcca	2340
gcaccagttt cgctcgcgcg cctatcacgg tgcttacgca gaacgtcctc agtgccttag	2400
aaatactgcg gctagtgcga ttggacctgc gacaactggc gcaatccgta caggacacta	2460
ttcaacacat gcggtttctc tatcttttgt aaccgacact gacagtagcg ggtaataaaa	2520
acaataggat ttttatcggt tttttatggt acaaaacaac gtatcacttt cacggtgatt	2580
tattcttgct attccttttc cccttgggct gtcagcgccg ggtgcgcgac acggctacca	2640
tgcgcaacag gtccagctta aaggcgcaact tgcattaaa caggctggac atgcgcgtgt	2700
acttgctcag catggtggcc aacaccgggt ggggtggcctc tgatatctcg gtcggcagct	2760
ccaaaacgac gttaacgacg tgacggtgtt tttcgtcccg cttggtggcc accgtgggtc	2820
ccggcgcggt gttagacatg gggcaggccg tggggggagg acgaagagga agccgctgct	2880
aaaccgccgc gcgcctgctg cacaatgtgg ccgccgacgt ggcaggcggt ctgtttaacc	2940
agcgcgcagc cccgacacag cggggcgccg tctcgcgttt ccaaacagct gtcgcggtac	3000
tcgcccgtct gacagcgcgc gcacagcagg ccgtgccctg gcgaagttag gcgcaggaga	3060
cgggggaccg tcacgtcgcg taccaccaca gtggagtcgc aggtgcgtgc cgcgcagggc	3120
agaatgacgt cgaaagccag ccggtgatcg tacacggcac aagccgcgtt gagggccagc	3180
acggctttcc agcccacgcg tacgcagcgc tgtccaaaga gcgtctcgga gacgagctcg	3240
tagacgcgct gccgcaccac ccgctgactg ccgcagagcg agcagtgcac gagctcggcg	3300

tgctgttga agatgacgct cttttcttga cggtcccgat aatagaacat cgagttgagc	3360
ggaaagtttt gctggcagtg tagcttttcc ttaccaggt tgaggcagtg tccgcactgc	3420
cgacagacca cggccaccag cgagcgcgcg tccagatggc gctcgactt gagtcgacac	3480
agacaccaga gcggcaggtc gatgacgctg ccgatgaggc cgccgcgcag cgcggcgcgtg	3540
agtgcaaaga ggacgatctt ggtgggctct acgtgacgcg cctgctgtcc ggcgcccgcg	3600
tgtcctaccg ccgcagctgc cgccgtcgag cctcctccgc gcgtctcgtc gtgcagaccc	3660
agtgcgccga acggcaccag gtatcgcgga cacgtgtcgc aaaacgtctg caccgcttgt	3720
cgggccagta cgtagagcgg gtttccgcag ggtaccttcc cggcgtaccg gcgcaaggct	3780
gcgatgaggc cccgcaactg cggcgaccgc ggctgccgtt ggtgacacca ctggttacgg	3840
tgggtatacg ccaaatacgc gcgggcgtcg aagcgcttgg cgcgtagtaa tgctaggcac	3900
ggcgagctgg tggggtgaag cacgggcagc cgaaggcca cccgaaaag gaaacggtga	3960
aggtcaccta gcagcgaggc ggtgacaccg tccaacaacg cgtgcagccg ctcgggcggg	4020
tagagccgca gacggcgcag caggtagtcg gtgtcgtagc gttcgaaacg cagaaaggcc	4080
atcgtgcgga cggccacggt gtgcagacag tccatgctgt agacgtaagc gagaaacaca	4140
aagtagggct tggtcataac catacgtga aagagcgccg tcaccgcctc ccgctcggct	4200
tgccgacaca ccagccattc gcgcagggaag cgttggtaga gacggtcgcc cagctcgcga	4260
ttcagaaagc gcttatccgt cacgaagaga tgaaggacgc aagaacgtgg cacgtgatgc	4320
accagctgct gctggaggac cgccgacgtc tgcgccgcaa actgcgccgg tggctgcgac	4380
gtttctaccg ccgcttcctc cggctgcagc gcaccgcggc cgatcaccag ctgcacatgg	4440
aatggtcct cgtgaacgca gaggggcgcg aagagacggc gcagagcctg gtggaactca	4500
tcagtgcggg tgtgcggagc gtgtcggaga cgacgactgg ccatgaccgc gccacagcag	4560
agccagcacc agcagaagag ccagcaccag cgggccaga gtcgcaaagc gcgcgggcag	4620
ccacggccca gactgcggtc gcgatggccc ggagcgcgct cgccaccacg atgacggtgc	4680
ccaacgataa ccagtccgct ccaaggacgg cgcgcacggc ggagacggcg gatgacggtg	4740
atgggtcgac acccctcgcc gacgactcac gtgtcctcctc agaggccgac gcgcggaccc	4800
tccgacgtcc tgccccgcg ctgcgcgtgc cgccttcctt tctcccgcca gagccagcaa	4860
ctcctcctcc tcttcatcag cgtctccctc gcttgcgcat ccgcatcgtc ccatacaggc	4920
ctcacaacga cacagccgcc acgacccgcg cgccatgggt ggcggcggcg gccgaggccc	4980
ggcagcggcg ccgccagcgg cgaccatggt gggagagcaa ctcggatgac gaggaggagg	5040
agggggagat gcggtccgag aggaccgctt tcccgccgtt cgcgtaagcg cggccgacat	5100

gcggggcgcgc cacagggacg gaccgctgcc gctgtgactg cttacgggtga cgtgggtccg	5160
gaccgccaac gacgtcgacg cggctttctt ggcgtacagc tcgcgcagca gattctcgta	5220
ctcgccctcg ttttcgggtc cgaaggcgat gagctcgatg ttgaagaccg acgccgaatt	5280
ggatttgccg accacgcact tcgtcagcac tccgtaggcc gagggcttga tctcctcgat	5340
gtccttgagc gtgacgatga gcgactcgtt caccttaagc acattgaact cacctacgtg	5400
gcgcgcgggc gaaacgagct tgacggggcg tcgtacaaaa cagcagaggg agacggcgca	5460
gccagtgttt ttaaagataa aacaaggcac gtggtctgtg cggctctccc agtagctgag	5520
tagatactcg acacaataga ccgtgtctgt cttgagcatg gcgtcgaca ccgagtaatt	5580
ggggttttta cagatgaggc cggcatcggg gacgcgcagc tcgctgggac ccaacttgag	5640
gatacgccgc gtggcctgca ccagatcctg atggagaacc ttgttcattt ccacgcacc	5700
gacgccaccg ccgatttatt taccggcgcg cgactcgtct tttccctcca ggattccgtt	5760
aatgtccatg agcttgctga cgatcgccgt taatagttgc gtcttctcac ggaggatctc	5820
tccgtgactg caggtcgcgc agtcgccgtg cacgtacttg aggaaggcgg cgtacttctg	5880
accgcggttc acgaaattta agcgcgcgtc cagagagggc agcaacagat cgtagacgcg	5940
cggcagcatc ggctcgaact gtaatagcag atcgctcgta agatcgggta gcgcgtgtcc	6000
gtcttcaccg tcctcgtcgt caccacctcc cccctcgagc ccaccgctcg taccagccgc	6060
gggtccgcg tcctcgtcga tcaccagcgg tcgcgtcggc accggagaat ccacgtcate	6120
ctgcacgtcg ttttctctct ctccgtcgtc atcgctcaga aacggcaccg gctgcttagc	6180
ccaggacatt cttttttccg cgtcctcaat cagcggcgcc gatcgccatg aatccgagta	6240
cccacgtgag cagtaacggc ccaacgactc cccctcacgg gccccacacc acgtttcttc	6300
ccccgaccag cccggccccg tccaccagct ccgtcgccgc cgtacacttg tgcagtccgc	6360
aacgacaggc cgtttcgctg tacagcggct ggagcaccga gtacaccag tggcactcgg	6420
acttgacaac tgagctgcta tggcacgcgc acccgctca agtacctatg gacgaagcgc	6480
tggccgcgcg ggccggccgc tcataccagg taaatctca acaccccgcc aaccgttacc	6540
gtcattacga attccagacg ctgagcctcg gcacctcgga ggtagacgaa ctgctcaact	6600
gttgtgcgga agaaaccacg tgcggcggca cgcaatccac cgtactcacc aatgcgacca	6660
acaccactag ctgcggcgga gccgtcgccg gcagtagcaa cgtaggaccc gccggcgctt	6720
cggccgcctg cgacctagat gcagaactgg ccggcctcga aacctcggcg gccgactttg	6780
aacaactgcg gcgactgtgc gcgccgctgg ccatcgacac gcgctgtaac ctatgcgcca	6840
tcatcagcat ctgcctcaaa caggactgcg accagagctg gctcctcgag tacagcttgc	6900
tgtgcttcaa atgcagttac gcgccccgtg cggcgctcag cacgctcatc atcatgtccg	6960

agtttacgca tctgctgcag cagcactttt cccatctgcg catcgacgac ctgttccgac	7020
accacgttct cacggtcttc gatttccacc tgcacttttt catcaatcgt tgctttgaaa	7080
aacaagtggg cgacgcggtt gataacgaga atgtcacctt gaaccatctg gccgtggtgc	7140
gggccatggt catgggtgaa gacacggtgc cttacaacaa gcctcggcgc caccgcgaac	7200
agaagcaaaa aaacaaccct tatcacgtcg aagtgccgca agaactgatc gacaactttc	7260
tagaacacag ctcacctagc cgcgaccgct tcgtgcagct gcttttctat atgtgggccc	7320
gcaccggcgt catgagcacc acgccactca cggaaactcac gcacactaag ttcgcgcgac	7380
tagacgcgtt atccacggcc tcggaaagag aagacgcaag gatgatgata gaagaagagg	7440
aggatgaaga aggaggagaa aaaggaggag acgatccggg ccgtcacaac ggcggtggca	7500
ccagcggggg gttcagcgag agcacgctaa aaaaaaacgt ggggccatt tacctatgtc	7560
ccgtaccgcg tttttttacc aagaaccaa ccagtaccgt gtgtctgctg tgcgaactca	7620
tggcctgctc ctattacgat aacgtcgtcc tgcgcgagct gtaccgccgc gtcgtctcgt	7680
attgtcagaa caatgtgaag atgggtggacc gcattcagct ggtattggcc gatctgttgc	7740
gcgaatgcac gtcgcgcgtc ggcgcggcac acgaggacgt ggcgcgctgt ggactcgaag	7800
caccacctc gcccgagggc gactcggact accacggcct gagcggcgtc gacggcgcac	7860
tggcgcgacc cgaccgggta ttttgccacg tcctgcgtca ggcaggcgtc acgggcatct	7920
acaagcactt tttctgcgac ccgcagtgcg ccggcaacat ccgcgtcacc aacgaggccg	7980
tgctcttcgg acgcctgcac ccccaccacg tccaggaggt gaaactggcc atctgtcacg	8040
acaattacta tataagtcga cttccgcgac gtgtgtggct ctgcatcaca ctcttcaagg	8100
cctttcagat tacaaaacgc acctacaaag gcaaagtgca cctggcggac tttatgcggg	8160
atttcacgca gctgttgagg agttgcgaca tcaagctggt ggacccacg tacgtgatag	8220
acaagtatgt ctagcgtgag cggcgtgcgc acgccgcgcg aacgacgctc ggccttgcgc	8280
tccctgctcc gcaagcgcg ccaacgcgag ctggccagca aagtggcgtc gacggtgaac	8340
ggcgctacgt cgccaacaa ccacggcgaa ccgccgtcgc cggccgacgc gcgcccgcgc	8400
ctcacgctgc acgacctgca cgacatcttc cgcgagcacc ccgaactgga gctcaagtac	8460
cttaacatga tgaagatggc catcacgggc aaagagtcca tctgcttacc cttcaatttc	8520
cactcgcacc ggcagcacac ctgcctcgac atctcgccgt acggcaacga gcaggctctg	8580
cgcacgcct gcacctcgtg cgaggacaac cgcacctcgc ccaccgcctc cgacgccatg	8640
gtggccttca tcaatcagac gtccaacatc atgaaaaata gaaactttta ttacgggttc	8700
tgtaaagaca gcgagctact caagctctcc accaaccagc cgcccatctt ccaaatttat	8760

tacctgctgc	acgccgccaa	ccacgacatc	gtgcccttta	tgcacgccga	ggacggccgg	8820
ttgcacatgc	acgtcatctt	cgaaaacccc	gacgtgcaca	tcccctgcga	ctgcatcacg	8880
cagatgctca	cggcggcgcg	cgaagactac	agcgtcacgc	tcaacatcgt	gcgcgaccac	8940
gtcgttatca	gcgtgctgtg	tcacgccgtc	tcggccagca	gcgtcaagat	cgacgtgact	9000
atthttgcaac	gcaagattga	cgagatggac	attcccaacg	acgtgagcga	gtcctttgag	9060
cgctacaaaag	agctcattca	ggagctgtgt	cagtcacgcg	gcaacaacct	atacgaggag	9120
gccacgtcgt	cctacgcgat	acggctctcc	ttaaccgcgt	cggcgttgca	cgtagtttcc	9180
accaacggct	gcggcccttc	ctcctcgtcc	cagtcacgcg	cgcctcatct	ccaccgccg	9240
tcgcaggcga	cgcagcccca	ccactactct	caccaccagt	ctcagtctca	gcagcatcat	9300
caccgtcccc	agtcaccacc	gccgccgctg	tttctcaaca	gcattcgtgc	gccttgacac	9360
tgtacggcag	aaaagccggc	tccaagtgcg	agcgcgcggg	cagcaccatg	tgcaaaaact	9420
tgtccttgcg	cgcggtttcg	ccgccgggaa	agacgggcga	cagcacgtta	gttacagcct	9480
tgagaacctg	ctcaaagtac	ttgtcggcgt	gaatgggcac	gccgtgctcg	cgcacgtagc	9540
tcggatcttc	ggctacctcg	tagttgcaca	cggccgacgg	tggtttccgc	gccctcttct	9600
ttgccggctc	tcctcctctc	ctgttgctct	cctctacccc	gccgccgtca	gcgtcgtcgt	9660
ccgtgccatc	aatcgcgtcc	gaccgggaaa	ccacgccggc	ggttacagaa	tcaccgttgt	9720
cggaggaacc	ctgcggcgcc	gtccggacac	cgggcgccgt	cagaacgtaa	aagaccgat	9780
ccccgaccga	gggtagctcc	tcagaacggg	ccgccaatcg	cttaatgacg	gcaatgtgcg	9840
gcaggttaga	ttgacggtag	agcgagatgt	ccttagagag	caccgacgaa	agcaccaggt	9900
cctcgacacg	cacacgggtg	aggtacagat	cgtcgcgggc	ctgcaccaag	cggcgtaaga	9960
tacgccagaa	accgcgtggc	acgccgtact	tcttgacttc	atcgagttag	aggcgcgaca	10020
ggcgcacggc	tgcttccgag	acctcgcgat	cctcaaagag	cagcgagagg	acgtcacgcg	10080
tgacgccctt	gacgaactcg	caggccgtct	tgcgcaccag	atccacgccc	ttcatgctca	10140
gacccgaggc	gccctccact	ttgccgatgt	aacgtttctt	gcagatcatc	ataagagaga	10200
cgaagacctt	ttcaaactcc	agcttgacgg	gtccacaaaa	aagacaggcc	gtcacgtagt	10260
gcgccaggct	gggcccacgc	gccaccagag	cctgcggcgt	caggccacga	aagcggacaa	10320
acacgctgtc	cgtgtccccg	tagatgaccc	gcgcctccac	ccgccgttcg	ttcgagcccc	10380
ctgacgatgt	ttcgagcccc	tcgggtaacg	cgctgctctc	ctccgaatcc	ccctcccgcg	10440
ttcccactac	atagtcttcc	tgattaaaaa	aattgtgcaa	aaaacacggc	tctgaaaagt	10500
tgtctttgat	gaaccgcgcc	gtgcgctcta	gcatgtcgcg	accgatgcgc	gtgatgctgg	10560
cggcgatggg	cagacacggc	atcataccgt	tgaccacgcc	ggtaaaaccg	tagaaagcgt	10620

tgcacgttac	tttgagcgcc	atctgttcc	tgtcgagcag	catacggcgc	acagggctct	10680
gaactcgcg	catgcattcg	cgacaggcac	gccgctgcga	aaccacttg	ttgagcagtt	10740
ccgagagcac	cgagacgcgc	accgaagcac	gcacaaagcg	gtgggtcacg	ccgttctcta	10800
gcgtgacgct	gtatacgtcg	gcgggtcca	cagggtactc	gccacccggc	accagcaggg	10860
tggagtagca	gaggttggtg	gccatgatga	tggaagggtg	gaggctggca	aagtcgaaca	10920
cggccacggg	gtcgtttag	taaccacct	cgggtcaaa	caccgtggcg	ccctggtacg	10980
aaaccgccgc	agtaccgccc	gcgccgtgat	tgtcgttgga	aacgccgacg	ccgccactac	11040
tgccggagcc	gacgctgaaa	acgccgacgc	tgctactact	gttactgccg	gagccgggtg	11100
aaacgccgtc	ctgactggac	ggcgcagatt	gcaaggcgcg	cgacatctga	aacatagccg	11160
ccacagaacc	cgcgtcgccg	ggcacagcgg	cggtagagat	gatagcagcg	ttaggtgaca	11220
cagcaacgct	attcgtttcg	ggcacgctcg	tacctttgct	gtagtgggtg	ggcaggataa	11280
aatcgcgga	ggcgactcg	tccagcagcg	aggtgtagat	acggatctgc	tgccgtcaa	11340
agatgacacg	ccgcaacgga	atcttagcca	gccgcgcgat	ggccccggcc	tcgtagtga	11400
aattaatggt	gttgaacaga	tcgcgcacca	atacggcgtc	ctgcagacag	taacggccta	11460
cctgggcgcg	gccctcggca	ttagccacga	aacaacgcgg	gatgtccttg	taagacaggt	11520
catccttgcg	ttgccgcagg	taaagctcgg	ccatagtgtt	gagcttatag	ttgggcgagt	11580
tagtcttggc	catgcataca	gggtacatgt	cgataaccac	cgaaccgcga	atatacacct	11640
tggtggcggc	cgtgctggcc	ggattgttgt	gagaagccga	gggaaaagcg	gcggcggtact	11700
gccgcttaaa	accacagcg	gggtgtgta	aaaagaaacg	gccgccctgc	gccgtaggca	11760
acttgacagaa	gcgctgcgag	tccaccttat	acaggctactc	gagacgcgtg	aggatgtact	11820
tcaagtcaaa	agagttgatg	ttgtaaccgg	tcacaaaggc	cggcgcgtag	cgttgaaaga	11880
aaagcataaa	gcccagcagc	agctcgattt	cgggaaggga	ctcgtagacg	tccacgtctg	11940
ggcccacctg	cccgcagggtg	ccgatcgtaa	agagatgaag	acccgagtgc	ccaagatca	12000
caccctccga	agtgcagccc	cgaccatcgt	tcccgtttgg	gatcccctga	tccacggcgg	12060
tgtttcccc	cgtctcgtag	cacacgcacg	agatctgaat	gacaatgtca	tcggacttct	12120
cggcgaggg	aaaaccaccc	tcgccgctca	tgactcgtat	atcgaaggac	aggcatcgat	12180
agcgcgcca	cgagctgtcg	tcgggcacag	ccaccaggtc	agagacatcg	cagtctacct	12240
cgatatcaca	agtcgacgcg	cgaccctgct	gccgccagtc	gtaacgattc	acggagcacc	12300
agccgaacgt	ggtgatccgc	cgatcgatga	ccaaacgcgt	cagcggatcc	acacggacct	12360
cgtacacggg	aaaaccctgc	tccagcagat	actcgccgat	ttttctggcc	atggtccagt	12420



tgctgataga cacacactgc aaatcgggca cgggtcgcgt cccgtaccca tagatggagg 12480  
 tcttggtggc cggcgtgaca gacacggcgt atggcgccg cggttcgggc actagttcgc 12540  
 ccacgctggc aatgacctca cgcagcctat cgggtgcgt gtactcacag taaaagtagc 12600  
 tgcgctgccc gaaaacgttg acgcagatac tgtagccgtg ttctgtggcc ccgaagaaac 12660  
 gcaacacgtt ccccgaaggc accagatgct gacgatagcg cggcgacacg ttttcgggcg 12720  
 agtcgaagaa gagcacggcg tccgtctgat cgtagggtg aaaacgaata ggtccacca 12780  
 cgcgaccac caggggtctcg cgccaaggac acggccaaac catgtcatga ctcaacaaat 12840  
 gtttaatctc tcgatagaac atgagaggca gccgtcccgt cttatgcttg atcaaccccg 12900  
 tctgaccgtc gaacatgaca cctcgggca cgatctgcaa aaactgtttc tgtggcggcc 12960  
 gcttgcccga gccctgcgcg gagccgggct gcgaacgtg acgccggcca cccgcgaccg 13020  
 caccgccgt caccgcccg ctccagatac gggtgaaaaa catagcggac cgtgagaggc 13080  
 tgacagctta cgaagcaaaa tcacaaagaa aatacacatg cagcacctag atatccagtt 13140  
 taaccccgta tatcacaagt ctctgtgtca atattttttg tctagttttt ttttcctcct 13200  
 gggtcagacg ttctcttctt cgtcggagtc tttcaagtgt ctgtagccgt ttttgcgatg 13260  
 tcgcagccgg tctagcaggt taggcttctg tcccttgctc tgcgtgccag tctgtccgtc 13320  
 caaagaatct gtaccgttct gctgcgctcg ctgctctgcg tccagacggg ccagggccag 13380  
 aagcatctgg taagcctgct cgttggtgta aggcggagcc gccgtggatg catcagacga 13440  
 cgggtggtccc ggtcctttgc gaccagaatt ataaacactt tcctcgtagg aaggcggagc 13500  
 ctgtaacgac gtgtcttttg tgctgccga cgtcacggtg gtcccgtcgg cggacaccag 13560  
 atagggaaaag aggttctgca gcggctgcgt gcacagacgc cgctgtcgag tatagatcaa 13620  
 ataagtata atgactacgg ctatggccac gaggatgatg gtgaaggctc cgaaggggtt 13680  
 tttgaggaag gtggcaacgc ctccgaccac ggaggccacc gcgccacca cggccccaat 13740  
 ggctacgcca acggcctttc ccgcggcgcc caggccgctc atgaggtcgt ccagaccctt 13800  
 gaggtagggc ggtagcgggt cgactacctt gtcctccacg tactttaccc gctgcttgta 13860  
 cgagttgaat tcgcgcatga tctcttcgag gtcaaaaacg ttgctggaac gcagctcttt 13920  
 ctgcgagtaa agttccagta ccctgaagtc ggtattttcc agcgggtcga tatccagggc 13980  
 gatcatgctg tcgacgggtg agatactgct gaggtcaatc atgcgtttga agaggtagtc 14040  
 cacgtactcg taggccgagt tcccggcgat gaagatct 14078

<210> 30  
 <211> 4569  
 <212> DNA  
 <213> Human cytomegalovirus

<400> 30  
agatcacgat acagccggcg gtatcgataa tcttgttgcg gtactggatg gtaaagtcgg 60  
gctcgggctt gatgtcttcc tgtttgatga ggggcagcat gataggcgcg ggaggcacgg 120  
gcgggtttaat aatcaccttg aaaggacgcg tggttttgcg cggtttctta cgcgggctga 180  
gctcgggagt agcggatgcc ccggggagag gagtgttagt aaccgcgacg ctggtggggg 240  
tcggcttggt aagaggggcg ctgctaacgc tgcaagagtg ggttgtcagc gtggggccgg 300  
tgctactgga atcgataccg gcatgattga cagcctgggc gaggatgtca cctgatggtg 360  
ataagaagac acgggagact tagtacggtt tcacaggcgt gacacgttta ttgagtagga 420  
ttacagagta taacatagag tataatatag agtatacaat agtgacgtgg gatccataac 480  
agtaactgat atatatatac aatagtttac tggtcagcct tgcttctagt caccataggg 540  
tgggtgctct tgcctccaga ggcggtgggt tcctcagcac catcctcctc ttctctggg 600  
gcaacttcct ctatctcaga cactggctca gacttgacag acacagtgtc ctcccgtcc 660  
tcctgagcac cctcctcctc ttctcatca ctctgctcac tttcttctg atcactgttc 720  
tcagccacaa ttactgagga cagagggata gtcgcggtta caggggactc tgggggtgac 780  
accagagaat cagaggagct gacaccagcg gtggccaaag tgtaggctac aatagcctct 840  
tcctcatctg actcctcggc gatggcccgt aggtcatcca cactaggaga gcagactctc 900  
agaggatcgg ccccagaat gtactgggca aagaccttca tgcagatctc ctcaatgcgg 960  
cgcttcatta cactgataac ctgaggcttg gttatcagag gccgcttggc cagcatcaca 1020  
ctagtctcct ctaagacata gcagcacagc acccgacaga actcacttaa gagagagatg 1080  
ccccgtaca tggatcatcat acaagcgtca ctagtacct tgtactcatt acacattggt 1140  
tcacacatg tagtgaggat atccataaat atgtgatcaa tgtgctgag caccttgtct 1200  
ctctctcat ccaaaatctt aaatatcttc tgggcataag ccataatctc atcaggggag 1260  
cactgaggca agttctgcag tgccgccatg gcctgactgc agccattggt ggtcttaggg 1320  
aaggctgagt tcttggtaaa gaactctata ttctgtagc acatatacat catctttctc 1380  
ctaagttcat ccttttttagc acgggcctta gcctgcagt cccccccaa cttgttagcg 1440  
gcgcccttgc tcacatcatg cagctcctta atacaagcca tccacatctc ccgcttatcc 1500  
tcagggtacaa tgtagtcttc atacatgctc tgcatagtta gcccaatata cttcatctcc 1560  
tcgaaaggct catgaacctt atctaagata tctaaggcat tctgcaaaca tcctcccatc 1620  
atattaaagg cgccagtga tttctcttcc gtctgggtat attttttcag catgtgctcc 1680  
ttgattctat gccgcacat gtccactoga accttaatct gtttgactgt agaggaggat 1740  
aacaacacat ataagtatcc gtcctcctga ctcatctatc gctatctcga tgccccgctc 1800

acatgcaaga gttaatcttt actctatctg acatacacia gtaaateccac gtcccatgca	1860
ggtagtagata catcacatac atgtcaacag acttaccgag ttctgccagg acatctttct	1920
cgggggttctc gttgcaatcc tcggtcactt gttcaaaagt tttgagggat tcttcggcca	1980
actctggaaa cagcgggtct cccagactca gctgactgtt aacctccttc ctcaacatag	2040
tctgcaggaa cgtcgtggcc ttggtcacgg gtgtctcggg cctaaacaca tgagaaatag	2100
agtcataagc acatgggtca catacaggag atatgtatat aacattaata caattttatt	2160
aaaaaaaaag ggggggcaca aaccccgaca cgtaccgtgg caccttgag gaagggccct	2220
cgtcaggatt atcagggtcc atctttctct tggcagagga ctccatcgtg tcaaggacgg	2280
tgactgcaga aaagacccat ggaaaggaac agtctgttag tctgtcagct attatgtctg	2340
gtggcgcgcg cggcagcaac gactactgct cagactacac tgccctccac cgtaacagc	2400
accgcaacgg gagttacctc tgactcttat cagaacacaa caactcagct gcctgcatct	2460
tcttctgccg ctgccttaag tcttccaaat gcgtcagcgg tgcaagcccg ctccccgagc	2520
tcattttcag acacataccc taccgccacg gccttgctgcg gcacactggt ggtggtgggc	2580
atcgtgctgt gcctaagtct ggctccact gttaggagca aggagctgcc gagcgacat	2640
gagtcgctgg aggcattgga gcagggtcgc gatgtagaag ctccgccgct accggagaag	2700
agcccatgtc cggaacacgt acccgagatt cgcgtggaga tcccacgtta tgtttaataa	2760
aaactgcggg cactggggac ggtggtgttg tatatgtgaa tttgtaaata ataatgaga	2820
ccccatcctg taaaaataca gagtccgtgt cagtctctga aggacagtgt attggcatat	2880
agccaataaa gagagtgtg gcaaagagcc atgttatgga ttagtaatgg aaagtatcgt	2940
caccaatagg ggagtggta ataattggtca ataaccaca cctataggct aagctatacc	3000
atcacctata acatgaggaa gcgggggtgt atagacccca agccaaaaac agtatagcat	3060
gcataagaag ccaagggggt gggcctatag actctatagg cggacttac gtcactcttg	3120
gcacggggaa tccgcgttcc aatgcaccgt tcccggccgc ggaggctgga tcggtcccgg	3180
tgtcttctat ggagggtcaa acagcgtgga tggcgtctcc aggcgatctg acggttcact	3240
aaacgagctc tgcttatata gacctccac cgtacacgcc taccgcccac ttgcgtcaat	3300
ggggcgaggt tgttacgaca ttttgaaaag tcccggtgat tttggtgcca aaacaaactc	3360
ccattgacgt caatggggtg gagacttgga aatccccgtg agtcaaaccg ctatccacgc	3420
ccattgatgt actgcaaaaa ccgcatcacc atggtaatag cgatgactaa tacgtagatg	3480
tactgccaag taggaaagtc ccataaggtc atgtactggg cataatgcca ggcgggcat	3540
ttaccgtcat tgacgtcaat agggggcgta cttggcatat gatacacttg atgtactgcc	3600

aagtgggcag	tttaccgtaa	atactccacc	cattgacgtc	aatggaaagt	ccctattggc	3660
gttactatgg	gaacatacgt	cattattgac	gtcaatgggc	gggggtcggt	gggcggtcag	3720
ccaggcgggc	catttaccgt	aagttatgta	acgcggaact	ccatatatgg	gctatgaact	3780
aatgaccccc	taattgatta	ctattaataa	ctagtcaata	atcaatgtca	acatggcggt	3840
aatgttgac	atgagccaat	ataaatgtac	atattatgat	atggatacaa	cgtatgcaat	3900
ggccaatagc	caatattgat	ttatgtctata	taaccaatga	ataatatggc	taatggccaa	3960
tattgattca	atgtatagat	cgatatgcat	tggccatgtg	ccagcttgat	gtcgctcta	4020
tgcgcatat	agcctcatat	cgtctgtcac	ctatatcgaa	actgcgatat	ttgcgacaca	4080
cagaatcgcc	caagtcacca	aagtcgtcta	tgcctatccc	ccgtaaacga	tataagcgct	4140
atcgccagat	atcgcgatg	cccaaaaatc	acttttggaa	aaatggcgat	atcagttaca	4200
cagaaactca	catcggcgac	attttcaata	tgccatattt	tcaaatatcg	atttttccaa	4260
tatcgccatc	tctatcggcg	ataaacacca	ctatcgcgcg	acatgaattt	agtcggcgac	4320
agaaatctca	aaacgcgtat	ttcggacaaa	cacacatttt	attattcact	gcagcatata	4380
gccattttta	gcgcggcaca	catccagccg	tttgtgtttt	ttaacgctct	ccaggctactg	4440
atccaggccc	acgatccggg	ttatcttgtc	gtattccagg	ttgatccatc	gatagggaac	4500
gctgccagcg	gcgccagca	ggtactgcgc	cttgctgttc	actttgccgc	agcgtattcg	4560
cccgtcagc						4569

<210> 31  
 <211> 2666  
 <212> DNA  
 <213> Human cytomegalovirus

<400> 31						
agatcgtgct	tccctcttcc	aaggatcgga	aagtagcgtc	cgtcgtttcc	gcggacgcgg	60
cttccttggg	acgctccgtt	tccgacgacg	cggtttcccg	ctgcgtggaa	actgtctcca	120
tgtcgggacc	gcagcgcccg	gcggcgatc	cgcaaggtct	cgaagctaca	gcttgtcaga	180
ggaaaagtag	gtttgcaaaa	aggtgcgcag	ggtcatgatt	ctcagcacca	tcagcagagt	240
gaaaaccaga	ctgagaaaca	ccttgacggc	cgccaaaagc	gcgcgttcca	gcggcgctct	300
gtagcgtaca	gccagggccg	cttcgtggaa	atgcgagacg	gctagacagg	taatgagcac	360
gctgaaggac	aagacgatct	taaagcacca	ggaccaacca	cgcctcaaga	tgaccaccac	420
gattgccgtg	aaggtcaacg	tgatcaaagc	atggacgacc	acgatctgac	ggcggacggt	480
acgttcggga	gccaacaacg	ctacgccggt	gcagctgaga	aaggccagta	aggtgaacaa	540
cgcgcccgag	atgaccaacg	taccgtccag	gcagagacat	atcacgatca	acggcggcac	600

gtgaagcagc gtgtaaaaga gcagaacgcc gatattgctg ggatgcgatg tttcgtaaca	660
gtgaatgaag atcactgacg tgacgggtat gacaaagacg aggctgggag aggactccgt	720
gagacacaga cgagaatggt gaaaccacgt cgcggggcgc gcgtagcaga aggcgctcaa	780
caacgcggtc aagccggcca gctgccaaacc caccggcgcca taggtgtgca gcgccacgcg	840
gcaacagtcg acccaagcca gactgcgggt cgccagccgg gtctcttgga tcccgggggg	900
cacgtagatg accgtgccat cgggtgggtac ttgaaaccct ttttctcttc tcatgggtgcg	960
ctgcgttctc tggaaacggc tgctctgtcc gaaaaccagt tccgaacgaa aatctagggc	1020
gagaggggtg acaacggcgt cgacgacgaa gcatgggaca ggctggttcg cgtaaacgtc	1080
atcgcgtcgg acgacggtag ttctaagaga cgtagatcgc tcagcaggtc ctgacagttg	1140
cggattcgca agatcagaaa aaaaaggga atgaacgtaa taaagagctg tagcgacgta	1200
tgcgccacat cgcgtggcat aagaacgtga cggacgaaaa ggacctgctg cgaaaagtga	1260
ccggcgaaga taaggccac cgtgctgtag aagcccaaaa gcagccgcag gggccaagtc	1320
cagggccgcg tgaagacgat gagaacgttg accagaaaaga ccacgaccca gacgccgttg	1380
atgagggtaa attgatcgga cagggtgcag ttgtcgcgac agatgaagac tacttccgcg	1440
cagagcaagg tgatgaccaa cgtgagcaca aacgacgtca acacctcgcg gggctcctgg	1500
caggcacacg tgacacctag cgccgggatg tgcgccagga ggccggcgag taatagcacc	1560
agctgtcgga acggacgacg gcagcgcggg tgccggtttc gctgagcgag aaccggtcgc	1620
tcatagcgga aatacacgaa gagcgcggag gccacaggca ccaggaggag cacctcgggc	1680
gcccagacaa cgtgacaagg aaagcccga cgcgacttga gagtcgctgt agggaagacc	1740
agagagaagc tacccaagac ggccaccgcc gcggagattt ggaagaggag caagccggcg	1800
attcgacga caacctcgaa gcgatgcacc cagcccgca cggccaccac ggccgcttca	1860
tcatagtcgt cgttgttgcc gctgtcgaac agccgccgaa acacgatctg tcgctgggtc	1920
gcggtgggaa agcgcagacc catgacagcc ggaggctata tgaccgcgcg tctaagacgc	1980
gagatccgtg gggggacttt tagatgtttg ggcggccgc ggttctaaca ggcttgattg	2040
gtggagacgg ccggcgcggc ggggtgggga aacgacgagt ttttccgtta cgccatggtt	2100
cgcgtgaggt ttctctgtac ctcccga aaagtcacagc ccgaaatgga ggccgcgttg	2160
gtggccccgg tggcgcgta cgataaccag gtcattcaag cgatgagttt gtctaagag	2220
tcctcgggtg tgaagaggat gagaatgagc aggtacaggt acaccagggt ctcatagaga	2280
cacaaggtga gcaggctcgc ctccgaccac gcgatctcaa acaggcgct ggtgtcaaa	2340
accgtgacga ccagcatgaa gctgagcgcc atggcgtaat agcccaaaaa aagtttgtgc	2400
cccaacggta cgggctgcag gtaaagtgc atcaagaac cgataacgcc gatcacaac	2460

agcgtgacga tgacctgcca tcgacggtga ttatggccgg ctagaccgt gacgcagctg 2520  
cagaggctaa aaagcacgca agccaagagg cccgagaagg tcactagcgt agaggaggag 2580  
caggcgctgg ccacgatcac cgaaagcgtc gtgagcacgc tataaatggt gagcaggcca 2640  
gggctcggtg gcgacgtgaa cgatcc 2666